

VPDES PERMIT FACT SHEET

This document gives the pertinent information concerning the **reissuance** of the VPDES permit listed below. This permit is being processed as a **major, municipal** permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260-00 et seq. The discharge results from the operation of a conventional activated sludge plant serving the Montgomery County area. This permit action consists of updating the boilerplate, removal of Outfall 002, and adding an E. coli limit. (SIC Code: 4952)

1. **Facility Name and Address:**

Lower Stroubles Creek WWTP

PO Box 52

Blacksburg, VA 24060

Location: 5277 Prices Fork Road, Blacksburg, VA 24060

2. **Permit No:** VA0060844 Existing Permit Expiration Date: June 6, 2009

3. **Facility/ Owner Contact:**

Mr. Michael E. Vaught, Executive Director, (540) 552-6940

4. **Application Complete Date:** October 8, 2008

Permit Drafted By: Kevin A. Harlow

Date: April 21, 2009

DEQ Regional Office: Blue Ridge Regional Office

Reviewed By: Kip D. Foster, Water Permit Manager

Reviewer's Signature:  Date: 4/27/09

Public Comment Period Dates: From _____ To _____

5. **Receiving Stream Classification:**

Receiving Stream: New River (River Mile: 71.37)

River Basin: New River

River Subbasin: None

Section: 2a

Class: IV

Special Standards: PWS, v

7-Day, 10-Year Low Flow:	542 MGD	7-Day, 10-Year High Flow:	767 MGD
1-Day, 10-Year Low Flow:	431 MGD	1-Day, 10-Year High Flow:	517 MGD
30-Day, 5-Year Low Flow:	710 MGD	Harmonic Mean Flow:	1517 MGD
30-Day, 10-Year Low Flow:	667 MGD	High Flow 30Q10:	1091 MGD
Tidal:	No	303(d) Listed:	Yes

Attachment A contains a copy of the flow frequency determination memorandum.

6. **Operator License Requirements:** I

7. **Reliability Class:** I

8. **Permit Characterization:**

- ☐ Private ☐ Interim Limits in Other Document
☐ Federal ☐ Possible Interstate Effect
☐ State
☒ POTW
☐ PVOTW

9. **Wastewater Treatment System:** A description of the wastewater treatment system is provided below. See **Attachment B** for the wastewater treatment schematics, site map, and a copy of the site inspection report. Treatment units associated with the discharge are listed in the table below.

Table I
DISCHARGE DESCRIPTION

Outfall Number	Discharge Source	Treatment (Unit by Unit)	Flow (Design) (MGD)
001	Lower Stroubles Creek WWTP	Mechanical screen and pump station; aerated dual grit chamber; primary settling with grease removal; activated sludge with biological nitrification / denitrification; secondary clarifiers; diversion chamber (chlorine gas added); chlorine contact tanks; dechlorinator; sludge thickening with dissolved air flotation; sludge dewatering with centrifuge; sludge incineration; ash disposal incineration	9 MGD
003	storm water from bar screen area	none	NA
004	storm water from grit chamber area	none	NA
005	storm water from grit chamber area and primary clarifier area	none	NA

Outfall Number	Discharge Source	Treatment (Unit by Unit)	Flow (Design) (MGD)
006	storm water from primary clarifier area, sludge holding tank, railroad line, and aeration basins	none	NA
007	storm water from near chlorine contact tank, aeration basins, and ash ponds	none	NA

The Town of Blacksburg operates a 9 MGD conventional activated sludge system consisting of grit removal, primary clarification, activated sludge system with biological nitrogen removal, secondary clarification, chlorine disinfection, and dechlorination. Sludge treatment consists of sludge thickening with dissolved air flotation, centrifugation, and incineration.

Storm water outfalls 003, 004, and 005 are associated with the bar screen, grit handling, and primary treated wastewater areas. The storm water outfall nearest the primary clarifier identified as outfall 005 is considered substantially identical to outfalls 003 and 004, and data for outfall 005 may also be considered representative of outfalls 003 and 004. Outfall 006 drains the area near the primary clarifiers. Outfall 007 drains the area near the ash ponds.

10. **Sewage Sludge Use or Disposal:** A VPDES Sewage Sludge Permit Application Form was submitted for this facility to address disposal of sewage sludge from the wastewater treatment facility. Sludge is thickened with dissolved air flotation and then dewatered with centrifuge. The dried sludge is then incinerated. Ash from the incinerator is stored in two earthen ponds and dewatered on a concrete drying pad prior to disposal at the New River Resource Authority.
11. **Discharge Location Description:** A USGS topographic map which indicates the discharge location, any significant dischargers, any water intakes, and other items of interest is included in **Attachment D**. The latitude and longitude of the discharge are N 37°11'29", E 80°31'34".

Name of Topo: Radford North, Virginia Number: 082A

Outfall 001 discharges to the New River at the Radford Army Ammunition Plant. The storm water outfalls, Outfalls 003, 004, 005, 006, and 007 discharge to Stroubles Creek.

12. **Material Storage:**

Tank ID	Tank Capacity (gallons)	Tank Contents	Storage Facilities
AST	2-9,816 gallon tanks	Fuel oil	Double-walled tank
AST	5,155 gallon tank	Fuel oil	Double-walled tank
Canisters	30 gallons	Propane canisters	Adjacent to Solids Handling Building and Electrical Distribution Building
Cylinders	6-2,000 pound cylinders	Chlorine gas	Inside building
Cylinders	4-2,000 pound cylinders	Sulfur dioxide gas	Inside building
Container	4,000 pounds	Polymer	Solids Handling Building
Containers	1,000 gallons	Lubricants and Oils	Control Building/Workshop
Containers	Varies	Miscellaneous Chemicals	Laboratory

13. **Ambient Water Quality Information:** Memoranda or other information which helped to develop permit conditions (special water quality studies, STORET data, and any other biological and/or chemical data, etc.) are listed below.

The receiving water body is the New River, which is within Section 2b of the New River basin as listed in the State Water Control Board's Water Quality Standards (WQS), River Basin Section Tables (9 VAC 25-260-430). The receiving stream is Class IV and is a Public Water Supply (PWS) with special standard 'v'. Class IV water quality standards include the following:

dissolved oxygen – 4.0 mg/L minimum and 5.0 mg/L daily average,
pH – 6.0 to 9.0 SU,
temperature – 31°C maximum.

The “v” special standard (Virginia Water Quality Standards 9 VAC 25-260-310.v) mandates a maximum temperature of 29°C.

Lower Stroubles Creek WWTP discharges into the New River in the New River/Toms Creek/Back Creek/Stroubles Creek Watershed (VAW-N22R) as described in the Integrated 2008 Water Quality Assessment and 303(d) Impaired Waters Fact Sheet (**Attachment C**). This segment has been listed as impaired due to PCBs in fish tissue.

Flow frequencies for outfall 001 were determined by using flow frequencies for the gauge located at the Route 11 bridge in Radford, Virginia. The flow frequencies of the discharge point were determined using drainage area proportions and have been reduced by the volume of the Radford Arsenal WTP#1 withdrawal and the Blacksburg-Christiansburg-VPI Water Authority WTP withdrawal because these withdrawals are located between the gauge and the outfall 001 Lower

Stroubles Creek WWTP discharge point. **Attachment A** contains a copy of the flow frequency determination memorandum.

STORET monitoring station (9-NEW081.72), located at the Route 11 bridge in Radford, has been used to determine instream average hardness and 90th percentile pH and temperature values. The monitoring data for this station are included in **Attachment C**.

Stream data and effluent data used to determine 90th percentile pH and temperature values for the wasteload allocation (WLA) spreadsheet are included in **Attachment D**. The permit limits are established by determining wasteload allocations that will result in attaining and/or maintaining all water quality criteria that apply. The WLAs will provide for the protection and maintenance of all existing uses. See **Attachment D** for the wasteload allocation spreadsheet.

14. **Antidegradation Review and Comments:** Tier I _____ Tier II X Tier III _____

The State Water Control Board's Water Quality Standards includes an antidegradation policy (9 VAC 25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier I or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier II water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier II waters is not allowed without an evaluation of the economic and social impacts. Tier III water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The antidegradation review begins with the Tier determination. The 2008 Impaired Waters fact sheet indicates the receiving segment of the New River is impaired for "PCB in Fish Tissue" and not supporting the fish consumption use. (Attachment E contains the 2008 Impaired Waters fact sheet.) Because the impairment is determined by PCBs in fish tissue rather than PCBs in the water column, a Tier II designation is appropriate. Therefore the New River at the discharge location is classified as a Tier II water, and no significant degradation of existing quality is allowed.

For purposes of aquatic life protection, "significant degradation" means that no more than 25% the difference between the acute and chronic aquatic criteria values and the existing quality (unused assimilative capacity) may be allocated. For purposes of human health protection, "significant degradation" means that no more than 10% of the difference between the human health criteria and the existing quality (unused assimilative capacity) may be allocated. The significant degradation baseline (antidegradation baseline) is calculated for each pollutant as follows:

$$\text{Antidegradation baseline (aquatic life)} = 0.25 (\text{WQS} - \text{existing quality}) + \text{existing quality}$$

$$\text{Antidegradation baseline (human health)} = 0.10 (\text{WQS} - \text{existing quality}) + \text{existing quality}$$

Where:

"WQS" = Numeric criterion listed in 9 VAC 25-260-5 et seq. for the parameter analyzed

"Existing quality" = Concentration of the parameter being analyzed in the receiving stream, including the facility's existing discharge.

When applied, the antidegradation baselines become the new water quality criteria to prevent significant degradation of the receiving stream. Effluent limits for future expansions or new facilities must be written to maintain the antidegradation baselines for each pollutant. Prior to expansion the antidegradation baselines will be calculated for this facility as described above, in accordance with Guidance Memorandum GM00-2011. Permit limits are in compliance with antidegradation requirements set forth in the 9 VAC 25-260-30.

15. **Site Inspection:** Date: 12/13/2007 Performed by: Troy Nipper
Attachment B contains a copy of the site inspection memorandum.
16. **Effluent Screening and Limitation Development:** DEQ Guidance Memorandum 00-2011 was used in developing all water quality based limits pursuant to water quality standards (9 VAC 25-260-5 et seq.). Refer to **Attachment D** for the wasteload allocation spreadsheet and effluent limit calculations. See **Table II** on page 14 for a summary of limits and monitoring requirements.

A. **Mixing Zone**

The MIXER program was run to determine the percentage of the receiving stream flow to be used when calculating the wasteload allocations (WLAs). The program output indicated that 100 percent of the 7Q10 and 5.6 percent of 1Q10 may be used for calculating acute and chronic wasteload allocations (WLAs). A copy of the print out from the MIXER run is enclosed in **Attachment A**.

B. **Effluent Limitations for Conventional Pollutants**

Flow -- The permitted design flow of 9 MGD for this facility is taken from the previous permit and the application for the reissuance. In accordance with the VPDES Permit Manual, flow is to be continuously measured.

pH -- The pH limits of 6.0 S.U. minimum and 9.0 S.U. maximum have been continued from the previous permit. These limits are based upon the water quality criteria in 9 VAC 25-260-50 for Class IV receiving waters and are in accordance with federal technology-based guidelines, 40 CFR Part 133, for secondary treatment. Grab samples shall be collected once per day.

Total Suspended Solids (TSS) -- TSS limits are technology-based requirements set in the 1975 issuance for the proposed 9 MGD facility and comply with technology-based requirements for municipal dischargers of secondary treatment required in accordance with 40 CFR Part 133. Effluent limits of 24 mg/l, 818 kg/d as a monthly average and 36 mg/l, 1226 kg/d as a maximum weekly average have been required for TSS. The concentration limits are the same as the previous permit. The loading limits are now

expressed to two significant digits, 810 kg/day and 1200 kg/day respectively, as recommended in Guidance Memo 06-2016. In accordance with Guidance Memorandum 98-2005, the monitoring frequency reduction for TSS from 7/week to 1/week has been continued from the previous permit. See **Attachment E** for the details regarding the justification for reduced monitoring.

Biochemical Oxygen Demand (BOD₅), Dissolved Oxygen (DO) -- The baselines for DO and BOD₅ were established for this segment when the facility began the discharge to the New River. The final limits for BOD₅ of 24 mg/l, 818 kg/d monthly average and 36 mg/l, 1226 kg/d maximum weekly average and DO of 6.6 mg/l were established in the 1994 permit reissuance using the regional dissolved oxygen model. The loading limits are now expressed to two significant digits, 810 kg/day and 1200 kg/day respectively, as recommended in Guidance Memo 06-2016. **Attachment D** contains the model results required to meet the DO water quality criteria in 9 VAC 25-260-50 for Class IV receiving waters. These limits were established for the 6.0 MGD facility. A simplified DO model was run for the 9.0 MGD facility. This model did not predict a reasonable potential to violate antidegradation by maintaining the 24/36 mg/l effluent limitations. Composite samples for BOD₅ and grab samples for DO are required. In accordance with Guidance Memorandum 98-2005, the monitoring frequency reduction for BOD₅ from 7/week to 1/week has been continued from the previous permit. The monitoring frequency reduction for DO from 1/day to 5 days/week has been continued from the previous permit. See **Attachment E** for the details regarding the justification for reduced monitoring.

C. **Effluent Limitation Evaluation for Non-Conventional and Toxic Pollutants**

In addition to the standard limitations, the discharge must be evaluated to determine whether there is a reasonable potential for the effluent to violate the water quality standards (WQSs) adopted by the State Water Control Board (9 VAC 25-260 et. seq). Toxic pollutant data submitted with the application were above the quantification levels for dissolved copper, dissolved zinc, and chloroform. A reasonable potential analysis using STATS indicated that no limit is needed for these pollutants. The data and reasonable potential analysis are summarized in **Attachment C**.

Total Residual Chlorine (TRC) -- One data value, equal to the quantification level (QL) and the WLAs were input into the STATS program to generate limits. Based on the WLAs, the Agency's STATS program output indicated limits of 0.034 mg/l monthly average and 0.042 mg/l maximum weekly average were needed. The previous effluent limits of 0.031 mg/l monthly average and 0.038 mg/l maximum weekly average were more stringent. To avoid backsliding, the previous effluent limitations have been continued in this permit. Grab samples are required once per day. See **Attachment D** for the WLA spreadsheet and STATS program output.

E. Coli -- A new E. coli monthly average limit, calculated as a geometric mean, of 126 N/100ml has been added to the permit. Monitoring will be performed twice per month in

order to calculate the geometric mean. In accordance with 9 VAC 25-260-170, all sewage discharges shall disinfect to achieve the applicable bacteria concentrations prior to discharge. Previously DEQ has allowed the use chlorine disinfection monitoring requirements as a surrogate for E. coli and the facility successfully completed a study demonstrating the adequacy of chlorine as a surrogate for this facility. However, the EPA has requested that an E. coli limit be placed in all major, municipal permits. Therefore, the new E. coli limit, equal to the water quality standard of a geometric mean of 126 N/100mL E. coli, is added. If chlorine disinfection is no longer used then E.coli monitoring frequency is increased to once per day.

Whole Effluent Toxicity (WET) -- The facility has completed five acute and chronic toxicity tests on effluent from Outfall 001. The facility passed all toxicity tests with 100% survival in 100% effluent in each of the tests. No limit is needed as there was no toxicity demonstrated in any of the tests. Annual compliance monitoring using *Ceriodaphnia dubia* for the acute toxicity tests and *Pimephales promelas* for the chronic toxicity tests shall continue. See **Attachment F** for a compilation of the toxicity testing data.

PCBs: PCB monitoring for Outfalls 001 and 006 is included in a permit special condition. Justification is provided by 9VAC 25-260-10, 9 VAC 25-260-140, and GM09-2001. 9VAC 25-260-10 and 9 VAC 25-260-140 are part of Virginia's Water Quality Standards. 9VAC 25-260-10 contains the "fishable" designated use. 9 VAC 25-260-140 contains the PCB water quality criterion. GM09-2001 provides the PCB monitoring protocol for TMDL development. A PCB TMDL for the New River is scheduled for completion in 2014. Outfall 001 will be monitored since it is a wastewater discharge. Outfall 006 is monitored due to the drainage area including the electrical distribution building and proximity to the New River. GM09-2001 stipulates that the PCB data should not be used for compliance purposes.

- D. Storm Water** - The permittee has submitted documentation that outfalls 003, 004, and 005 are substantially identical outfalls. The drainage areas to these outfalls are associated with industrial activity from the bar screen, grit dumpsters, influent pump station, and grit chamber. Quarterly visual monitoring requirements for outfalls 003, 004, and 005 may be met by sampling outfall 005 and reporting that the examination data also applies to the substantially identical outfalls.

Since outfall 007 is not easily or safely accessed, quarterly visual inspection may be conducted at the drop inlet located directly upstream of the first manhole leading to outfall 007.

17. **Basis for Sludge Use and Disposal Requirements:** Since the facility incinerates sludge and hauls the ash to a landfill, there are no sludge limits or monitoring requirements.

18. **Antibacksliding Statement:** Since there are no limitations less stringent than the previous permit, the permit limits comply with the antibacksliding requirements of 9 VAC 25-31-220 L of the VPDES Permit Regulation.
19. **Compliance Schedule:** For this reissuance, there are no compliance schedules.
20. **Special Conditions:** A brief rationale for each special condition contained in the permit is given below.

A. **Additional Total Residual Chlorine (TRC) Limitations and Monitoring Requirements (Part I.B)**

Rationale: Required by Sewage Collection and Treatment Regulations, 9 VAC 25-790, bacteria standards; other waters. Also, 40 CFR 122.41(e) requires the permittee, at all times, to properly operate and maintain all facilities and systems of treatment in order to comply with the permit. This ensures proper operation of chlorination equipment to maintain adequate disinfection.

B. **Compliance Reporting under Part I.A and I.B (Part I.C.1)**

Rationale: In accordance with VPDES Permit Regulation, 9 VAC 25-31-190 J4 and 220 I, DEQ is authorized to establish monitoring methods and procedures to compile and analyze data on water quality, as per 40 CFR Part 130, Water Quality Planning and Management, Subpart 130.4. This condition is necessary when toxic pollutants are monitored by the permittee and a maximum level of quantification and/or specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. This condition also establishes protocols for calculation of reported values.

D. **95% Capacity Reopener (Part I.C.2)**

Rationale: Required by VPDES Permit Regulation, 9 VAC 25-31-200 B 2 for all POTW and PVOTW permits.

E. **Indirect Dischargers (Part I.C.3)**

Rationale: Required by VPDES Permit Regulation, 9 VAC 25-31-200 B 1 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.

F. **O&M Manual Requirement (Part I.C.4)**

Rationale: Required by Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790; VPDES Permit Regulation, 9 VAC 25-31-190 E.

G. **Licensed Operator Requirement (Part I.C.5)**

Rationale: The VPDES Permit Regulation, 9 VAC 25-31-200 D and the Code of Virginia § 54.1-2300 et seq, Rules and Regulations for Waterworks and Wastewater Works Operators (18 VAC 160-20-10 et seq.), require licensure of operators.

H. Reliability Class (Part I.C.6)

Rationale: Required by Sewage Collection and Treatment Regulations, 9 VAC 25-790 for all municipal facilities.

I. Sludge Reopener (Part I.C.7)

Rationale: Required by VPDES Permit Regulation, 9 VAC 25-31-220 C 4 for all permits issued to treatment works treating domestic sewage.

J. Sludge Use and Disposal (Part I.C.8)

Rationale: VPDES Permit Regulation, 9 VAC 25-31-100 P; 220 B 2; and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on sludge use and disposal practices and to meet specified standards for sludge use and disposal. Technical requirements may be derived from the Department of Health's Biosolids Use Regulations, 12 VAC 5-585-10 et seq.

K. Effluent Monitoring Frequencies (Part I.C.9)

Rationale: Permittees are granted a reduction in monitoring frequency based on a history of permit compliance. To remain eligible for the reduction, the permittee should not have violations related to the effluent limits for which reduced frequencies were granted. If permittees fail to maintain the previous level of performance, the baseline monitoring frequencies should be reinstated for those parameters that were previously granted a monitoring frequency reduction.

L. Bypass Point (Part I.C.10)

Rationale: This condition is included in accordance with the VPDES Permit Manual. The bypass point is identified, but the discharge from it is not authorized.

M. Section 303(d) List (TMDL) Reopener (Part I.C.11)

Rationale: Section 303(d) of the Clean Water Act requires that total maximum daily loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The re-opener recognizes that, according to section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are

the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Act.

N. CTO, CTC Requirement (Part I.C.12)

Rationale: Required by Code of Virginia 62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790.

O. PCB Monitoring (Part I.C.13)

Rationale: This special condition requires the permittee to monitor and report PCB concentrations in dry weather and wet weather effluent samples consistent with 9 VAC 25-260-280. The results from this monitoring shall be used to implement the PCB TMDL that is being developed for the New River.

P. Pretreatment (Part I.D)

Rationale: VPDES Permit Regulation, 9 VAC 25-31-730 through 900, and 40 CFR part 403 require certain existing and new sources of pollution to meet specified regulations.

Q. Toxics Monitoring Program (I.E)

Rationale: VPDES Permit Regulation, 9 VAC 25-31-210 and 220I, requires monitoring in the permit to provide for and assure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act. This requirement is included due to the pretreatment program requirement.

R. Storm Water Management

Rationale: VPDES Permit Regulation, 9 VAC 25-31-10 defines discharges of storm water from municipal treatment plants with design flow of 1.0 MGD or more, or plants with approved pretreatment programs, as discharges of storm water associated with industrial activity. 9 VAC 25-31-120 requires a permit for these discharges. The Pollution Prevention Plan requirements are derived from the VPDES general permit for discharges of storm water associated with industrial activity, 9 VAC 25-151-10 et seq.

S. Conditions Applicable to All VPDES Permits (Part II)

Rationale: VPDES Permit Regulation, 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

21. Changes to the Permit:

Special condition boilerplate language has been updated to reflect changes in the VPDES permit manual.

A. The following special conditions have been deleted from the permit:

The Form 2F special condition (old Part I.C.12) has been removed because the data has been submitted.

B. Special conditions that have been modified from the previous permit are listed below: (The referenced permit sections are for the new permit.)

1. The Additional Total Residual Chlorine (TRC) Limitations and Monitoring Requirements Special Condition (Part I.B) has been revised to change the E. coli monitoring frequency from 2/month to 1/day if chlorine disinfection is no longer used.
2. The Toxics Management Program (Part I.E) has been revised. The chronic test has been changed from "Chronic 3-Brood Static Renewal Survival and Growth Test using Pimephales promelas" to "Chronic 7-Day Static Renewal Survival and Growth Test using Pimephales promelas".
3. The storm water requirements (Parts I.F, I.G, and I.H) have been revised to reflect the requirements in the new VPDES General Permit for Storm Water Discharges Associated with Industrial Activity (9VAC25-151).

C. New special conditions added to the permit are listed below:

1. A CTC, CTO special condition (Part I.C.12) is added as recommended by the VPDES Permit Manual for all municipal permits.
2. A PCB Monitoring special condition (Part I.C.13) is added for the purposes of collecting data to be used for the development of the PCB TMDL for the New River.

D. Changes to Permit Limits and Monitoring Requirements: See Table III on page 15 for details on changes to the effluent limits and monitoring requirements.

22. **Variances/Alternate Limits or Conditions:** An application testing waiver was requested for the following: Part B.6 and Part D sample time frame, Part D parameters for which Virginia has not established water quality standards, Form 2F storm water monitoring data for substantially identical outfalls, and sludge pollutant concentrations. The facility has been recognized under the Virginia Environmental Excellence Program. The application items requested to be waived would not materially affect the reissuance of the permit. This waiver request was sent to the EPA, and no comments were received. In accordance with the Memorandum of Understanding, a variance from this testing requirement was granted.

23. **Regulation of Treatment Works Users:** The VPDES Permit Regulation, 9 VAC 25-31-280 B9, requires that every permit issued to a treatment works owned by a person other than a state or municipality provide an explanation of the Board's decision on the regulation of users. Blacksburg Sanitation Authority, a municipality, owns this treatment works; therefore this regulation does not apply.
24. **Public Notice Information required by 9 VAC 25-31-280 B:**

All pertinent information is on file and may be inspected, and copied by contacting **Kevin A. Harlow** at:

**Virginia DEQ
Blue Ridge Regional Office
3019 Peters Creek Road
Roanoke, Virginia 24060
Telephone: (540) 562-6700
kaharlow@deq.virginia.gov**

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing if public response is significant. Requests for public hearings shall state the reason why a hearing is requested, the nature of the issues proposed to be raised in the public hearing and a brief explanation of how the requester's interests would be directly and adversely affected by the proposed permit action. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given.

25. **303(d) Listed Segments (TMDL):** This facility discharges directly to the New River. The stream segment receiving the effluent is listed for PCBs in fish tissue on Part I of the 2008 303(d) list. The TMDL that will be prepared for this segment will likely not have a PCB allocation for this discharge. No limit for PCBs is included in this permit because PCBs are not considered to be in the effluent.
26. **Additional Comments:**
- A. **Previous Board Action:** None
 - B. **Staff Comments:** The discharge is not controversial. The discharge is in conformance with the existing planning document for the area.
 - C. **Public Comments:** (to be determined)

Table II -1
BASIS FOR LIMITATIONS – MUNICIPAL

() Interim Limitations
(x) Final Limitations

OUTFALL: 001
DESIGN CAPACITY: 9.0 MGD

Effective Dates - From: To: Expiration Date

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	Continuous	Recorded
pH (Standard Units)	1,3	NA	NA	6.0	9.0	1/Day	Grab
BOD ₅	4	24 mg/l 810 kg/d	36 mg/l 1200 kg/d	NA	NA	1/Week	24 HC
Total Suspended Solids	2	24 mg/l 810 kg/d	36 mg/l 1200 kg/d	NA	NA	1/Week	24 HC
Total Residual Chlorine	3	0.031 mg/l	0.038 mg/l	NA	NA	1/Day	Grab
Dissolved Oxygen	3,4	NA	NA	6.6 mg/l	NA	5 Days/Week	Grab
E. coli	3	126 N/100ml (geometric mean)	NA	NA	NA	2/Month	Grab

NA = Not Applicable
NL = No Limitations; monitoring only
24HC= 24 hour composite

The basis for the limitations codes are:

1. Federal Technology-Based Secondary Treatment Regulation (40 CFR Part 133)
2. Technology-Based
3. Water Quality Criteria
4. Other -- Water Quality Regional Model

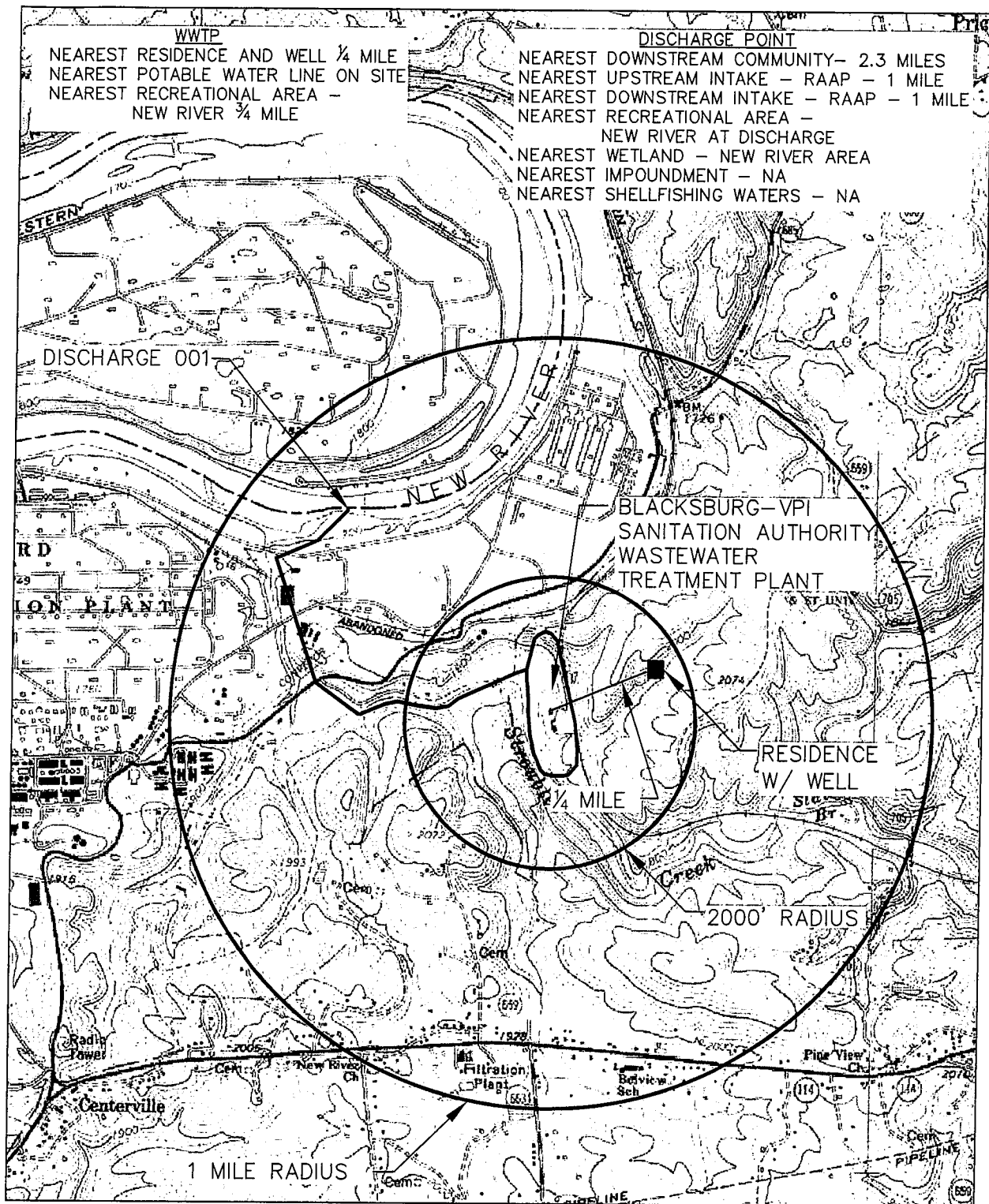
Table III
PERMIT PROCESSING CHANGE SHEET

LIMITS AND MONITORING SCHEDULE:

Outfall No.	Parameter Changed	Monitoring Requirement Changed		Effluent Limits Changed		Reason for Change
		From	To	From	To	
001	BOD ₅	No Change	No Change	818 kg/day monthly average; 1226 kg/day Weekly average	810 kg/day monthly average; 1200 kg/day weekly average	Guidance Memorandum 06-2016 recommends permit limits be expressed in terms of two significant digits.
001	TSS	No Change	No Change	818 kg/day monthly average; 1226 kg/day Weekly average	24 mg/L 810 kg/day	Guidance Memorandum 06-2016 recommends permit limits be expressed in terms of two significant digits.
001	E. coli	None	2/Month	None	126 N/100ml geometric average	EPA requested inclusion of E. coli limit in municipal major permits.

Attachment A

- **USGS Topographic Map**
- **Flow Frequency Memorandum**
- **Mixing Zone Analysis**



MAP TAKEN FROM NATIONAL GEOGRAPHIC TOPO, BLACKSBURG, VIRGINIA

**BLACKSBURG - VPI SANITATION AUTHORITY
VPDES PERMIT APPLICATION - ADDENDUM
SITE LOCATION MAP**

FIGURE 1

SCALE: 1=2000'
JOB NO.:10729.03

SEPT 2008
Fig 1.dwg

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
3019 Peters Creek Road Roanoke, Virginia 24017

SUBJECT: Flow Frequency Determination
Lower Stroubles Creek WWTP – Reissuance (VA0060844)

TO: Permit File

FROM: Kevin A. Harlow, Environmental Engineer Senior

DATE: March 25, 2009

The Lower Stroubles Creek discharges to the New River below its confluence with Stroubles Creek near Radford, Virginia. Stream flow frequencies are required at this site to develop effluent limitations for the VPDES permit.

The USGS has operated a continuous record gauge on the New River at Radford, Virginia (#03171000) since 1939. The gauge is located at the Route 11 bridge in Radford, Virginia. The flow frequencies for the discharge point were determined using drainage area proportions and have been reduced by the volume of Radford Arsenal WTP #1 withdrawal and the Blacksburg-Christiansburg-VPI Water Authority WTP withdrawal because these withdrawals are located between the gauge and the Lower Stroubles Creek WWTP discharge point. This analysis does not address any other withdrawals, discharges, or springs that may lie between the gauge and outfall. The high flow months are January through May.

The maximum high flow period withdrawal by WTP #1 occurred in March 1985 and equaled 973.772 million gallons (31.41 MGD monthly average) while the maximum VPI WTP withdrawal occurred during April 2001 and equaled 232.61 million gallons (7.75 MGD monthly average). The maximum withdrawal during the low flow period for the WTP #1 occurred during June 1985 and equaled 1090.53 million gallons (36.35 MGD monthly average) while the maximum VPI WTP withdrawal occurred during September 1998 and equaled 260.4 million gallons (8.68 MGD monthly average).

Using drainage area proportions, the flow frequencies for the gauge were projected to the discharge point. Then, the volume of the withdrawals was subtracted from the resulting flow values. Flow frequencies are listed on the attached table.

Flow Frequency Determination: Lower Stroubles Creek WWTP

VA0060844 - Critical Flow Frequencies for 2009 Permit Reissuance

Reference Gauge (data from 1940 to 2003) New River at Radford, VA (#03171000)				
Drainage Area [mi ²] = 2,748				
ft ³ /s	MGD	ft ³ /s	MGD	MGD
1Q10 =	719	High Flow 1Q10 =	840	543
7Q10 =	887	High Flow 7Q10 =	1,210	782
30Q5 =	1,140	HM =	2,350	1,519
30Q10 =	1020	High Flow 30Q10 =	1,660	1073

Flow frequencies for the reissued permit Roanoke River at Discharge Point				
Drainage Area [mi ²] = 2,815.0				
ft ³ /s	MGD	ft ³ /s	MGD	MGD
1Q10 =	667	High Flow 1Q10 =	431	517
7Q10 =	839	High Flow 7Q10 =	542	762
30Q5 =	1,098	HM =	710	1,517
30Q10 =	1,031	High Flow 30Q10 =	667	1,091

High Flow Months January through May

Facility	High Flow		Low Flow	
	Max Monthly Average Withdrawal			
	MGD	ft ³ /s	MGD	ft ³ /s
RAAP WTP #1	31.41	48.60	36.35	56.24
B-C-VPI WTP	7.75	11.99	8.68	13.43

Mixing Zone Predictions for

Lower Stroubles Creek WWTP - VA0060844

Effluent Flow = 9.0 MGD
Stream 7Q10 = 542 MGD
Stream 30Q10 = 667 MGD
Stream 1Q10 = 431 MGD
Stream slope = 0.001 ft/ft
Stream width = 350 ft
Bottom scale = 3
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = 2.8565 ft
Length = 48251.4 ft
Velocity = .8531 ft/sec
Residence Time = .6546 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = 3.2321 ft
Length = 43469.8 ft
Velocity = .925 ft/sec
Residence Time = .5439 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = 2.4939 ft
Length = 54104.98 ft
Velocity = .7803 ft/sec
Residence Time = 19.26 hours

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 5.19% of the 1Q10 is used.

Attachment B

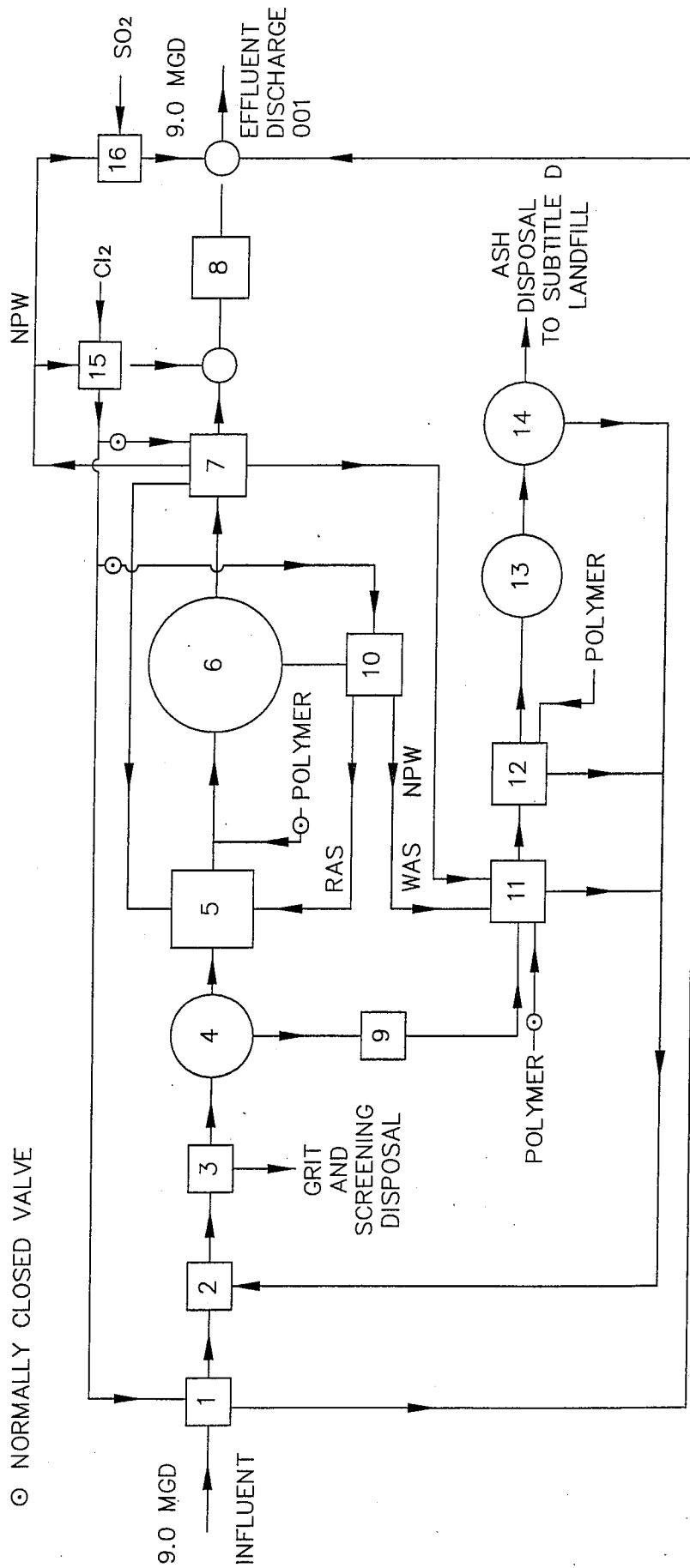
- **Wastewater Schematics**
- **Facility Site Map**
- **Inspection Report**

1. BAR SCREEN BUILDING
2. SCREW PUMPS & METERING
3. GRIT REMOVAL
4. PRIMARY SETTLING (2)
5. AERATION (3)
6. FINAL SETTLING (4)

7. NON-POTABLE WATER PUMPING
8. CHLORINE CONTACT TANK (3)
9. PRIMARY SLUDGE PUMPING
10. ACTIVATED SLUDGE PUMPING
11. DISSOLVED AIR FLOTATION (3)
12. CENTRIFUGE

13. INCINERATION
14. ASH PONDS
15. CHLORINATION BUILDING
16. SULFUR DIOXIDE BUILDING

⊙ NORMALLY CLOSED VALVE



BLACKSBURG - VPI SANITATION AUTHORITY LOWER TROUBLES CREEK WASTEWATER TREATMENT PLANT SCHEMATIC FLOW DIAGRAM

FIGURE 2

SCALE: NO SCALE
 JOB NO.: 10729.03

SEPT 2008
 \Figure 2.dwg





COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Preston Bryant
Secretary of Natural Resources

West Central Regional Office
3019 Peters Creek Road, Roanoke, Virginia 24019
Telephone (540) 562-6700, Fax (540) 562-6725
www.deq.virginia.gov

February 12, 2008

David K. Paylor
Director

Steven A. Dietrich
Regional Director

Mr. Michael Vaught
Executive Director
Blacksburg-VPI Sanitation Authority
P.O. Drawer 52
Blacksburg, VA 24063

Re: Technical and Laboratory Inspection Reports
Lower Stroubles Creek Wastewater Treatment Plant
VPDES Permit No. VA0060844

Dear Mr. Vaught:

Attached for your review are copies of the technical and laboratory inspection reports for the Lower Stroubles Creek wastewater treatment facilities. I conducted the inspections on December 13, 2007.

Please note there are no recommendations for action related to the operation of the wastewater treatment facilities.

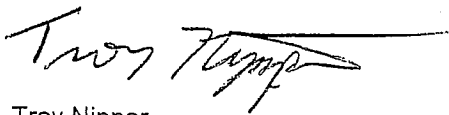
There were deficiencies noted during the laboratory inspection. Please note the deficiencies are in the Quality Assurance/Quality Control section and pertain to the Certification of Operator Competency tests. Facility staff should continue with efforts to complete these tests and provide monthly updates of your progress. If facility staff continue to have difficulties with passing the tests, do not hesitate to contact Agency staff for assistance.

Also, I would like to inform you of the new electronic option now available for submission of your facility's Discharge Monitoring Report (DMR) data. The Department of Environmental Quality (DEQ) now offers electronic DMR (e-DMR) submittal as an alternative to the current paper DMR submittal process. Using an electronic process for submitting effluent quality data can represent significant labor savings while increasing the timeliness, accuracy, and overall reliability of this information. The e-DMR software utilizes a universal file format to provide quick and easy transmission of data, and provides three methods for online data reporting. For more information on the e-DMR reporting system, including the participation package download, answers to frequently asked questions, and link to the e-DMR demonstration site, please visit the following website; <http://www.deq.virginia.gov/water/edmrfaq.html>.

I would like to remind you to visit the Virginia Environmental Excellence Program website at <http://www.deq.virginia.gov/veep/>. VEEP was developed by the Department of Environmental Quality (DEQ) to promote the use of environmental management systems and pollution prevention as a means of achieving greater environmental quality and improved organizational performance. This voluntary program offers recognition and incentives to encourage the adoption of environmental management systems and is open to, but is not limited to, manufacturers, commercial establishments, federal/state/local government agencies, schools, non-governmental organizations, and small businesses.

If you have any questions regarding these reports or the actions required, please contact me at the West Central Regional Office, Roanoke (540-562-6740).

Sincerely,



Troy Nipper
Enforcement/ Compliance Specialist, Senior

Attachments

Copies: S. C. Hale - DEQ/WCRO
S. G. Stell - DEQ/OWC

Facility: Blacksburg-VPI SA Lower Stroubles Creek WWTP
County/Town: Montgomery County

VPDES NO. VA0060844

DEPARTMENT OF ENVIRONMENTAL QUALITY – WEST CENTRAL REGIONAL OFFICE
WASTEWATER FACILITY
INSPECTION REPORT
PART I

Inspection date: 12/13/07 Date form completed: 1/8/08 Inspection scheduled: Y N
Inspection by: Troy Nipper *TN* Inspection agency: DEQ/WCRO Inspection announced: Y N
Time spent: 6 Hours ^{w/} travel & report
Reviewed by: S. C. Hale *SH*
Present at inspection: Bobby Epperly - Operator

TYPE OF FACILITY:

☐ Federal ☒ Domestic ☒ Major ☐ Primary
☒ Nonfederal ☐ Industrial ☐ Minor ☒ Secondary

TYPE OF INSPECTION:

☒ Routine
☐ Compliance/Assistance/Complaint
☐ Reinspection

Date of last inspection: 8/21/2007
Agency: DEQ/WCRO

Population served: ~ 70,000

Connections served: Unknown

DMR information available in Agency files.

Last month average: (Influent)	BOD: mg/L Other:	TSS: mg/L	Flow: MGD
Last month average: (Effluent)	BOD: mg/L Other:	TSS: mg/L	Flow: MGD
Quarter average: (Effluent)	BOD: mg/L Other:	TSS: mg/L	Flow: MGD

DATA VERIFIED IN PREFACE ☐ Updated ☒ No changes

Has there been any new construction? ☐ Yes ☒ No

If yes, were plans and specifications approved? ☐ Yes ☐ No ☒ NA

DEQ approval date: NA

(A) PLANT OPERATION AND MAINTENANCE

1. Class and number of certified operators: I - 8, II - 1, III - 3, Laboratory Supervisor - 1
2. Hours per day plant is manned: 24 hours/day, 7 days/week
3. Describe adequacy of staffing. ☒ Good ☐ Average ☐ Poor
4. Does the plant have an established program for training personnel? ☒ Yes ☐ No
5. Describe the adequacy of the training program. ☒ Good ☐ Average ☐ Poor
6. Are preventive maintenance tasks scheduled? ☒ Yes ☐ No
7. Describe the adequacy of maintenance. ☒ Good ☐ Average ☐ Poor
8. Does the plant experience any organic/hydraulic overloading? ☒ Yes ☐ No
If yes, identify cause and impact on plant: NA
9. Any bypassing since last inspection? ☐ Yes ☒ No
10. Is the standby electric generator operational? ☒ Yes ☐ No ☒ NA
11. Is the STP alarm system operational? ☒ Yes ☐ No ☐ NA
12. How often is the standby generator exercised? Twice/month*
Power Transfer Switch? Once/month Alarm System? Weekly
13. When were the cross connection control devices last tested on the potable water services? 05/16/06
14. Is sludge being disposed in accordance with the approved sludge disposal plan? ☒ Yes* ☐ No
15. Is septage received by the facility? ☐ Yes ☒ No
Is septage loading controlled? ☐ Yes ☐ No ☒ NA
Are records maintained? ☐ Yes ☐ No ☒ NA
16. Overall appearance of facility: ☒ Good ☐ Average ☐ Poor

Comments:

12. The facility has two generators, each capable of independently maintaining plant operational units. Each generator is exercised on-line once per month and off-line once per month.

14. Fly ash is disposed at the Montgomery County Landfill.

* Responses with this symbol should be of particular concern and the investigator may want to address the problem in more detail in the Comments Section.

(B) PLANT RECORDS

1. Which of the following records does the plant maintain?

Operational Logs for each unit process	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Instrument maintenance and calibration	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Mechanical equipment maintenance	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Industrial waste contribution (Municipal Facilities)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA

2. What does the operational log contain?

<input checked="" type="checkbox"/> Visual observations	<input checked="" type="checkbox"/> Flow measurement
<input checked="" type="checkbox"/> Laboratory results	<input checked="" type="checkbox"/> Process adjustments
<input checked="" type="checkbox"/> Control calculations	<input checked="" type="checkbox"/> Other (specify) – See below

Comments: **Ambient air temperatures and rainfall records are maintained.**

3. What do the mechanical equipment records contain?

<input checked="" type="checkbox"/> As built plans and specs	<input checked="" type="checkbox"/> Spare parts inventory
<input checked="" type="checkbox"/> Manufacturers instructions	<input checked="" type="checkbox"/> Equipment/parts suppliers
<input checked="" type="checkbox"/> Lubrication schedules	<input type="checkbox"/> Other (specify)

Comments:

4. What do the industrial waste contribution records contain (Municipal Only)?

<input checked="" type="checkbox"/> Waste characteristics	<input checked="" type="checkbox"/> Locations and discharge types
<input type="checkbox"/> Impact on plant	<input type="checkbox"/> Other (specify)

Comments:

5. Which of the following records are kept at the plant and available to personnel?

<input checked="" type="checkbox"/> Equipment maintenance records	<input checked="" type="checkbox"/> Operational Log
<input checked="" type="checkbox"/> Industrial contributor records	<input checked="" type="checkbox"/> Instrumentation records
<input checked="" type="checkbox"/> Sampling and testing records	

6. Records not normally available to plant personnel and their location: **None**

7. Were the records reviewed during the inspection? ☒ Yes* ☐ No

8. Are the records adequate and the O & M Manual current? ☒ Yes* ☐ No

9. Are the records maintained for the required 3-year time period? ☒ Yes ☐ No

Comments:

7. Daily operational logs and laboratory records were reviewed in depth subsequent to the inspection.

8. The O&M manual was revised on 09/21/2005.

(C) SAMPLING

1. Do sampling locations appear to be capable of providing representative samples? ☒ Yes ☐ No
2. Do sample types correspond to those required by the VPDES permit? ☒ Yes ☐ No
3. Do sampling frequencies correspond to those required by the VPDES permit? ☒ Yes ☐ No
4. Are composite samples collected in proportion to flow? ☒ Yes ☐ No ☐ NA
5. Are composite samples refrigerated during collection? ☒ Yes ☐ No ☐ NA
6. Does plant maintain required records of sampling? ☒ Yes ☐ No
7. Does plant run operational control tests? ☒ Yes* ☐ No

Comments: 7. Operational control testing includes pH, Temperature, D.O., MLSS, MLVSS, Settleable Solids, SDI, SVI, and Alkalinity.

(D) TESTING

1. Who performs the testing? ☒ Plant ☐ Central Lab ☐ Commercial Lab

Name:

If plant performs any testing, complete 2-4.

2. What method is used for chlorine analysis? **Hach Method #8167 for the chlorine contact tank and S.M., 18th Ed., #4500-Cl C for after dechlorination.**
3. Does plant appear to have sufficient equipment to perform required tests? ☒ Yes ☐ No
4. Does testing equipment appear to be clean and/or operable? ☒ Yes ☐ No

Comments:

(E) FOR INDUSTRIAL FACILITIES WITH TECHNOLOGY BASED LIMITS ONLY NA

1. Is the production process as described in the permit application? (If no, describe changes in comments)
☐ Yes ☐ No ☐ NA
2. Do products and production rates correspond as provided in the permit application? (If no, list differences)
☐ Yes ☐ No ☐ NA
3. Has the State been notified of the changes and their impact on plant effluent? Date:
☐ Yes ☐ No* ☐ NA

Comments:

Problems identified at last inspection:

There were no recommendations for action identified during the previous inspection.

SUMMARY

Recommendations for action:

There are no recommendations for action at this time.

DEPARTMENT OF ENVIRONMENTAL QUALITY – WEST CENTRAL REGIONAL OFFICE
LABORATORY INSPECTION REPORT SUMMARY

10/01

FACILITY NAME:	Blacksburg VPISA Lower Stroubles Creek Wastewater Treatment Plant	VPDES NO:	VA0060844	INSP. DATE:	12/13/07
LABORATORY RATING		X*	NO DEFICIENCIES		
			DEFICIENCIES		

QUALITY ASSURANCE / QUALITY CONTROL

*The following deficiencies were noted with the Quality Assurance/Quality Control (QA/QC) section at this time. The following observations were made:

1. It was noted facility staff are performing the RPD calculation for all TSS duplicates. Agency guidance states that RPD is to be performed for duplicates with an average less than 10 mg/L. For test results with an average greater than 10 mg/L, the individual results must be within $\pm 5\%$ of the duplicates' average.
2. The Certification of Operator Competency tests have been initiated. The following are the parameter discussion.
 - a. TRC utilizing the HACH Pocket Colorimeter. - Multiple operators failed the competency tests. The results were not within $\pm 10\%$ of the known value.
 - b. TRC utilizing Amperometric Back Titration. - Multiple operators failed the competency tests. The results were not within $\pm 10\%$ of the known value.
 - b. TSS - One operator did not pass the competency test. The results were not within $\pm 10\%$ of the known value.

* The Operator Competency tests need to be completed in a timely manner. During the next routine inspection, completion of these will be reviewed. Please keep in mind that if one of the 4 tests fail, then the series must be restarted.

Note(s):

1. In the previous inspection report, it was noted that a laboratory control sample (LCS) must be analyzed quarterly for the parameter of TRC. This no longer applicable for this test. This includes both TRC methods cited by the facility.

2. At the time of the inspection, facility staff were collecting effluent D.O. samples for analysis in the laboratory. The QA/QC was discussed with facility staff. Facility staff initiated in situ analysis of effluent D.O. analysis.

For more information on the changes to 40 CFR Part 136, including edited versions of Tables IA, IB, & II, a Quality Control (QC) Comparison Table, and answers to frequently asked questions (FAQ), please visit the "What's New" section of the DEQ's VPDES website; <http://www.deq.virginia.gov/vpdes/>.

LABORATORY RECORDS

No deficiencies were noted with the Laboratory Records section.

GENERAL SAMPLING AND ANALYSIS

No deficiencies were noted with the General Sampling and Analysis section.

LABORATORY EQUIPMENT

No deficiencies were noted with the Laboratory Equipment Section.

PARAMETER SUMMARY CONTINUED

pH

No deficiencies were noted for the analysis of the pH parameter.

Total Residual Chlorine (TRC) - Hach Method #8167

No deficiencies were noted for the analysis of the TRC parameter.

Total Residual Chlorine (TRC) - Amperometric Back (Iodine Titrant)

No deficiencies were noted for the analysis of the TRC parameter.

Total Suspended Solids (TSS)

No deficiencies were noted for the analysis of the TSS parameter.

Dissolved Oxygen (D.O.)

No deficiencies were noted for the analysis of the D.O. parameter.

Biochemical Oxygen Demand (BOD₅)

No deficiencies were note for the analysis of the BOD₅ parameter.

**DEPARTMENT OF ENVIRONMENTAL QUALITY – WEST CENTRAL REGIONAL OFFICE
LABORATORY INSPECTION REPORT**

10/01

FACILITY NO: VA0060844	INSPECTION DATE: 12/13/07	PREVIOUS INSPECTION DATE: 8/22/2007	PREVIOUS EVALUATION: No Deficiencies	TIME SPENT: 24 hours with travel & report
NAME/ADDRESS OF FACILITY: Blacksburg VPI Sanitation Authority Lower Stroubles Creek WWTP 5277 Prices Fork Road Blacksburg, VA 24063		FACILITY CLASS: (X) MAJOR () MINOR () SMALL () VPA/NDC	FACILITY TYPE: (X) MUNICIPAL () INDUSTRIAL () FEDERAL () COMMERCIAL LAB	UNANNOUNCED INSPECTION? (X) YES () NO
				FY-SCHEDULED INSPECTION? (X) YES () NO
INSPECTOR(S): TRN Troy Nipper		REVIEWERS: S. C. Hale	PRESENT AT INSPECTION: Teresa Ducan & Bobby Epperly– Lower Stroubles	

LABORATORY EVALUATION	DEFICIENCIES?	
	Yes	No
QUALITY ASSURANCE / QUALITY CONTROL	X	
LABORATORY RECORDS		X
GENERAL SAMPLING & ANALYSIS		X
LABORATORY EQUIPMENT		X
pH ANALYSIS PROCEDURES		X
TOTAL RESIDUAL CHLORINE (Hach #8167) ANALYSIS PROCEDURES		X
TOTAL RESIDUAL CHLORINE (Amperometric Titration) ANALYSIS PROCEDURES		X
TOTAL SUSPENDED SOLIDS ANALYSIS PROCEDURES		X
DISSOLVED OXYGEN ANALYSIS PROCEDURES		X
BIOCHEMICAL OXYGEN DEMAND ANALYSIS PROCEDURES		X

QUALITY ASSURANCE/QUALITY CONTROL			
Y/N	QUALITY ASSURANCE METHOD	PARAMETERS	FREQUENCY
Y	REPLICATE SAMPLES	TSS	Each test
N	SPIKED SAMPLES		
Y	STANDARD SAMPLES	BOD ₅ / pH / TRC	Daily / Weekly
N	SPLIT SAMPLES		
Y	SAMPLE BLANKS	BOD ₅	Each test
Y	OTHER Linearity checks	TRC	Daily
Y	OTHER Buffering capacity checks	TRC	Weekly
Y	OTHER Multiple weighings	TSS	Daily
Y	EPA-DMR QA DATA? Study #26	RATING: (X) No Deficiency () Deficiency () NA	
N	QC SAMPLES PROVIDED?	RATING: () No Deficiency () Deficiency (X) NA	

COPIES TO: (X) DEQ/WCRO; (X) OWC; (X) OWNER; () Other:

Attachment C

- **2008 Impaired Waters Report (excerpt)**
- **Receiving Stream Data – Station 9-NEW081.72**



2008 Impaired Waters

Categories 4 and 5 by DCR Watershed*

New River Basin

Fact Sheet prepared for DCR Watershed: N22*

Cause Group Code: N29R-01-PCB

New River, Claytor Lake, Peak Creek and Reed Creek

Location: The impairment begins at the I-77 bridge crossing the New River and extends downstream to the VAWVA State Line and includes the tributaries Peak Creek and Reed Creek as described below.

City / County: Giles Co.

Montgomery Co.

Pulaski Co.

Radford City

Use(s): Fish Consumption

Cause(s) /

VA Category: PCB in Fish Tissue/ 5A

The Virginia Department of Health (VDH) issued a fish consumption advisory on August 6, 2001 for polychlorinated biphenyls (PCBs) for the lower portion of the New River (Rt. 114 Bridge downstream to the VA / WVA State Line - 52.0 miles) based on fish tissue collections from Carp. An Advisory extension to Claytor dam was issued 8/06/2003 (11.47 miles) recommends that no carp be consumed in these waters and no more than two meals per month of flathead and channel catfish. The VDH PCB Fish Consumption Advisory was further extended upstream on the New River (13 miles) to the I-77 Bridge to include the lower portions of Peak Creek (4.95 miles), Reed Creek (16.35 miles) and Claytor Lake (4,287 acres) on 12/02/2004. The VDH advises consumption should not exceed two meals per month for carp and smallmouth bass. The VDH level of concern is 50 parts per billion (ppb) in fish tissue.

There are eight fish tissue collection sites within the 2008 data window reporting exceedences of the WQS based 54 ppb fish tissue value (TV). These data are reviewed by the VDH in making an advisory determination. A complete listing of collection sites and associated fish tissue data are available at <http://www.deq.virginia.gov/fishtissue/fishtissue.html>. A more detailed presentation of the data can also be found using an interactive mapping application at <http://gisweb.deq.state.va.us/>. The VDH Advisory information is also available via the web at <http://www.vdh.virginia.gov/Epidemiology/PublicHealthToxicology/Advisories/>.

Assessment Unit / Water Name / Description	Cause Category / Name	Cycle First Listed	TMDL Schedule	Size
VAW-N22R_NEW01A00 / New River Lower 1 / The New River mainstem from the confluence of Back Creek downstream to the Watershed Boundary at the Montgomery / Giles County Line.	5A PCB in Fish Tissue	2002	2014	3.47
VAW-N22R_NEW02A00 / New River Lower 2 / New River mainstem from the Radford Army Arsenal Plant downstream intake near Whitethorne downstream to the confluence of Back Creek.	5A PCB in Fish Tissue	2002	2014	2.88
VAW-N22R_NEW03A00 / New River Middle 1 / New River mainstem from the confluence of Stroubles Creek downstream to the Radford Army Arsenal Plant downstream water intake near Whitethorne.	5A PCB in Fish Tissue	2002	2014	4.52
VAW-N22R_NEW04A00 / New River Middle 2 / New River mainstem from the Radford Army Arsenal Plant upstream intake/Pepper's Ferry Region POTW outfall downstream to the confluence of Stroubles Creek.	5A PCB in Fish Tissue	2002	2014	2.35
VAW-N22R_NEW05A00 / New River Upper / New River mainstem from the Blacksburg /Christiansburg /VPI Authority intake at Rt. 114 downstream to the Radford Army Arsenal Plant upstream intake / Pepper's Ferry Regional POTW outfall.	5A PCB in Fish Tissue	2002	2014	1.77



2008 Impaired Waters

Categories 4 and 5 by DCR Watershed*

New River Basin

Fact Sheet prepared for DCR Watershed: N22*

Assessment Unit / Water Name / Description	Cause Category / Name	Cycle First Listed	TMDL Schedule	Size
VAW-N22R_NEW06A00 / New River Upper 2 / New River mainstem from the Watershed Boundary at the Crab Creek confluence downstream to the Blacksburg /Christiansburg /VPI Authority intake.	5A PCB in Fish Tissue	2006	2014	1.73

New River, Claytor Lake, Peak Creek and Reed Creek	Estuary (Sq. Miles)	Reservoir (Acres)	River (Miles)
DCR Watershed: N22*			
PCB in Fish Tissue - Total Impaired Size by Water Type:			16.72

Sources:

Source Unknown

*Header Information: Location, City/County, Cause/VA Category and Narratives; describe the entire extent of the Impairment. Sizes presented are for Assessment Units (AUs) lying within the DCR Watershed boundary noted above.

Receiving Stream Data
Station 9-NEW081.72

Parameter_Name	Concentration (ug/L)
ARSENIC AS,DISS UG/L	0.35
CHROMIUMCR,DISS UG/L	0.18
COPPER CU,DISS UG/L	0.65
MANGNESEMN,DISS UG/L	14.32
NICKEL NI,DISS UG/L	0.05
ZINC ZN,DISS UG/L	3.68

	pH (s.u.)
Avg	7.63
10th %ile	7
90th %ile	8.3

	Temp(C)
Annual	13.6
Wet Season	8.8

Attachment D

- **Effluent Data Summary**
- **Wasteload Allocation Spreadsheet**
- **Reasonable Potential Analysis**
- **Dissolved Oxygen Model Calculations**

Lower Stroubles Creek WWTP
VPDES Permit No. VA0060844

Effluent pH Data

Days	Jan-09	Feb-09	Mar-09	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08
1	7.3	7.0	6.9	6.8	7.2	6.9	7.2	7.1	7.0	6.8	6.7	6.9
2	7.2	7.1	6.9	6.9	7.1	7.1	7.2	7.0	6.9	6.8	6.8	6.9
3	7.2	7.0	6.9	6.8	7.0	7.1	7.1	7.1	6.9	6.8	6.8	6.8
4	7.2	6.9	7.0	6.9	7.1	7.1	7.2	7.3	6.8	6.8	6.8	6.7
5	7.1	6.9	7.0	7.1	6.9	7.1	7.3	7.2	6.8	6.8	6.7	6.8
6	7.2	6.9	7.0	7.0	6.9	7.1	7.2	7.2	7.0	6.7	6.7	6.8
7	7.0	6.9	7.0	7.0	7.0	7.0	7.1	7.1	6.9	6.7	6.6	6.9
8	7.2	6.8	7.1	7.0	7.0	7.1	7.2	7.1	6.8	6.7	6.9	6.8
9	7.2	6.9	6.9	7.0	7.0	7.1	7.3	7.1	6.8	6.8	6.8	6.7
10	7.1	6.8	6.9	6.9	7.1	7.2	7.2	7.2	6.9	6.7	6.8	6.8
11	7.2	6.7	6.9	7.0	7.0	7.1	7.1	7.0	6.8	6.9	6.8	6.6
12	7.0	6.8	6.8	7.0	7.0	7.1	7.2	7.1	6.8	7.0	6.6	7.0
13	7.1	6.8	6.7	7.0	7.1	7.1	7.2	7.1	6.8	6.9	6.6	7.0
14	7.1	6.8	6.7	7.0	7.1	7.1	7.2	7.1	6.9	6.8	6.8	7.0
15	7.1	6.8	6.8	6.9	7.1	7.2	7.2	7.1	6.9	6.9	6.8	6.8
16	7.1	6.9	6.9	7.0	7.2	7.1	7.1	7.1	6.7	6.8	6.8	6.9
17	7.1	7.0	6.8	6.9	7.2	7.2	7.2	7.1	7.0	6.7	6.7	7.0
18	7.1	6.9	6.6	6.9	7.2	7.1	7.2	7.1	6.8	6.8	6.7	7.0
19	7.0	6.8	6.6	6.9	7.1	7.1	7.2	7.1	6.9	6.8	6.7	7.0
20	7.0	6.7	6.8	6.9	7.1	7.1	7.2	7.0	6.9	6.8	6.6	7.0
21	7.0	6.8	6.9	6.9	7.1	7.1	7.2	6.9	6.8	6.8	6.8	7.0
22	6.9	6.8	6.9	6.9	7.1	7.1	7.1	6.9	6.8	6.8	6.9	7.2
23	6.8	6.7	6.9	6.9	7.1	7.1	7.0	7.0	6.7	6.7	6.9	7.1
24	7.1	6.8	6.8	6.8	7.2	7.2	7.1	6.9	6.9	6.6	7.0	7.3
25	7.0	6.7	6.8	6.9	7.1	7.1	7.2	6.9	6.9	6.7	7.0	7.3
26	6.9	6.7	6.8	6.8	7.1	7.2	7.2	6.8	6.8	6.8	7.0	7.2
27	6.7	6.7	6.9	6.9	7.1	7.1	7.1	6.9	7.0	6.8	7.0	7.2
28	6.9	6.7	6.7	6.8	7.0	7.2	7.1	6.9	6.9	6.8	7.1	7.0
29	6.9	6.7	6.8	7.0	7.1	7.2	7.2	6.9	6.9	6.8	7.0	7.1
30	6.9		6.8	7.1	7.1	7.2	7.2	6.9	6.9	6.8	7.0	7.2
31	7.0		6.8		7.1		7.2	6.9		6.8		7.1

90th Percentile pH	7.2 S.U.
10th Percentile pH	6.7 S.U.

Lower Stroubles Creek WWTP
 VPDES Permit No. VA0060844

Effluent Temperature Data

Days	Jan-09	Feb-09	Mar-09	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08
1				60	62		69	73		72		58
2	53			61	63	67	69		74	70		58
3			55	60		67	70		74	69	66	58
4		57	55	58		67		73	74		66	58
5	57	57	55		63	68		73	74		66	58
6	55	62	55		64	68		73		70	66	
7	54	56	55	59	64		70	73		71	66	
8	53	56		59	65		70	73	74	71		56
9	53			60	65		70		75	71		58
10			53	60		70	71		74	71	64	60
11		54	55	61		70	71	72	74			60
12	53	55	55		62	70		71	74		64	57
13	53	56	57		62	70		72			64	
14	52	55	57	60	62		71	72		69	65	
15	51	56		60	63		71	72	75	68		59
16				60	64	70	71		74	70		59
17			57	61		69	71		73	71	62	59
18			57	61		69	71	72	74		62	59
19	53	56	59		62	69		72	73		60	59
20	53	57	58		62	68		73		67	61	
21	52	56		62	63		73	73		68	61	
22	53	56		62	63		73	73	73	67		53
23	53			62	64	69	73		73	67		53
24			56	63		69	72		71	67	58	54
25		56	57	63		69	72	74	72		58	
26	54	57	58			70		75	72		57	54
27	55	56	63		65	71		73		64		
28	55	54	62		66		73	72		65	57	
29	56			61	64		73	72	71	63		55
30	54			61	64	70	74		72	65		54
31			59		66		74			64		54

90th Percentile Temperature	73 °F	=	23 °C
90th Percentile Temperature (Wet)	74 °F	=	23 °C

Lower Stroubles WWTP
VA0060844

Effluent Hardness from Toxicity Testing

Date	Hardness (mg/l)	Date	Hardness (mg/l)
Nov-08	108	07/12/01	136
Nov-08	112	07/11/01	148
Nov-08	116	07/10/01	144
Nov-08	104	07/09/01	148
Oct-08	116	01/12/01	124
Nov-07	132	01/11/01	116
Oct-07	116	01/10/01	132
Oct-07	124	01/09/01	140
Oct-07	112	01/08/01	128
Oct-07	108	10/27/00	96
Oct-06	120	10/26/00	104
Oct-06	104	10/25/00	108
Oct-06	116	10/24/00	104
Oct-06	108	10/23/00	112
Sep-06	116	07/21/00	152
Oct-05	116	07/20/00	124
Oct-05	116	07/19/00	136
Oct-05	112	07/18/00	136
Oct-05	116	07/17/00	136
Oct-05	120	04/21/00	120
Oct-04	160	04/20/00	128
Oct-04	140	04/19/00	128
Oct-04	160	04/18/00	92
Oct-04	140	04/17/00	92
Oct-04	130	02/18/00	116
Sep-03	140	02/17/00	116
Sep-03	140	02/16/00	124
Sep-03	140	02/15/00	128
Sep-03	128	02/14/00	124
Sep-03	132	11/12/99	120
Nov-02	144	11/11/99	108
Oct-02	136	11/10/99	100
Oct-02	140	11/09/99	104
Oct-02	120	11/08/99	104
Oct-02	124	08/20/99	100
5/10/02*	142	08/19/99	108
1/15/02*	115	08/18/99	100
10/24/01*	122	08/17/99	112
8/24/01*	107	08/16/99	124
Jul-01	136		

Mean	122.3	mg/L CaCO3
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Application Data - WQS

Parameter	Concentration (ug/L)
Copper	13
Zinc	55
Chloroform	43.6

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Lower Stroubles Creek WWTP

Permit No.: VA0060844

Receiving Stream: New River

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		Stream Flows		Mixing Information		Effluent Information	
Mean Hardness (as CaCO ₃) =	100 mg/L	1Q10 (Annual) =	465 MGD	Annual - 1Q10 Mix =	5.19 %	Mean Hardness (as CaCO ₃) =	122.3 mg/L
90% Temperature (Annual) =	13.6 deg C	7Q10 (Annual) =	573 MGD	- 7Q10 Mix =	100 %	90% Temp (Annual) =	23 deg C
90% Temperature (Wet season) =	8.8 deg C	30Q10 (Annual) =	659 MGD	- 30Q10 Mix =	100 %	90% Temp (Wet season) =	23 deg C
90% Maximum pH =	8.3 SU	1Q10 (Wet season) =	543 MGD	Wet Season - 1Q10 Mix =	100 %	90% Maximum pH =	7.2 SU
10% Maximum pH =	7 SU	30Q10 (Wet season) =	1073 MGD	- 30Q10 Mix =	100 %	10% Maximum pH =	6.7 SU
Tier Designation (1 or 2) =	2	30Q5 =	737 MGD			Discharge Flow =	9 MGD
Public Water Supply (PWS) Y/N? =	y	Harmonic Mean =	1519 MGD				
Trout Present Y/N? =	n	Annual Average =	N/A MGD				
Early Life Stages Present Y/N? =	y						

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)
Acenaphthene	0	--	--	1.2E+03	2.7E+03	--	--	9.9E+04	2.2E+05	--	--	9.9E+03	2.2E+04	--	--	9.9E+03
Acrolein	0	--	--	3.2E+02	7.8E+02	--	--	2.7E+04	6.5E+04	--	--	2.7E+03	6.5E+03	--	--	2.7E+03
Acrylonitrile ^f	0	--	--	5.9E-01	6.8E+00	--	--	1.0E+02	1.1E+03	--	--	1.0E+01	1.1E+02	--	--	1.0E+01
Aldrin ^c	0	3.0E+00	--	1.3E-03	1.4E-03	1.1E+01	--	2.2E-01	2.4E-01	7.5E-01	--	1.3E-04	1.4E-04	4.0E+01	--	2.2E-02
Ammonia-N (mg/l)	0	1.49E+01	1.69E+00	--	--	5.5E+01	1.3E+02	--	--	1.39E+00	4.22E-01	--	--	5.5E+01	3.1E+01	--
Ammonia-N (mg/l) (High Flow)	0	5.46E+00	1.63E+00	--	--	3.3E+02	2.0E+02	--	--	1.36E+00	4.07E-01	--	--	8.4E+01	4.9E+01	--
Anthracene	0	--	--	9.6E+03	1.1E+05	--	--	8.0E+05	9.1E+06	--	--	8.0E+04	9.1E+05	--	--	8.0E+04
Antimony	0	--	--	1.4E+01	4.3E+03	--	--	1.2E+03	3.6E+05	--	--	1.4E+00	4.3E+02	--	--	1.2E+02
Arsenic	0.35	3.4E+02	1.5E+02	1.0E+01	--	1.3E+03	9.7E+03	8.0E+02	--	8.5E+01	3.8E+01	1.3E+00	--	1.3E+03	2.4E+03	8.0E+01
Barium	0	--	--	2.0E+03	--	--	--	1.7E+05	--	--	--	2.0E+02	--	--	--	1.7E+04
Benzene ^c	0	--	--	1.2E+01	7.1E+02	--	--	2.0E+03	1.2E+05	--	--	1.2E+00	7.1E+01	--	--	2.0E+02
Benzidine ^f	0	--	--	1.2E-03	5.4E-03	--	--	2.0E-01	9.2E-01	--	--	1.2E-04	5.4E-04	--	--	2.0E-02
Benzo (a) anthracene ^c	0	--	--	4.4E-02	4.9E-01	--	--	7.5E+00	8.3E+01	--	--	4.4E-03	4.9E-02	--	--	7.5E-01
Benzo (b) fluoranthene ^c	0	--	--	4.4E-02	4.9E-01	--	--	7.5E+00	8.3E+01	--	--	4.4E-03	4.9E-02	--	--	7.5E-01
Benzo (k) fluoranthene ^c	0	--	--	4.4E-02	4.9E-01	--	--	7.5E+00	8.3E+01	--	--	4.4E-03	4.9E-02	--	--	7.5E-01
Benzo (e) pyrene ^c	0	--	--	4.4E-02	4.9E-01	--	--	7.5E+00	8.3E+01	--	--	4.4E-03	4.9E-02	--	--	7.5E-01
Bis(2-Chloroethyl) Ether	0	--	--	3.1E-01	1.4E+01	--	--	2.6E+01	1.2E+03	--	--	3.1E-02	1.4E+00	--	--	2.6E+00
Bis(2-Chloroisopropyl) Ether	0	--	--	1.4E+03	1.7E+05	--	--	1.2E+05	1.4E+07	--	--	1.4E+02	1.7E+04	--	--	1.2E+04
Bromoforn ^c	0	--	--	4.4E+01	3.8E+03	--	--	7.5E+03	6.1E+05	--	--	4.4E+00	3.6E+02	--	--	7.5E+02
Butylbenzylphthalate	0	--	--	3.0E+03	5.2E+03	--	--	2.5E+05	4.3E+05	--	--	3.0E+02	5.2E+02	--	--	2.5E+04
Cadmium	0	4.2E+00	1.1E+00	5.0E+00	--	1.5E+01	7.4E+01	4.1E+02	--	9.9E-01	2.8E-01	5.0E-01	--	1.5E+01	1.8E+01	4.1E+01
Carbon Tetrachloride ^c	0	--	--	2.5E+00	4.4E+01	--	--	4.1E+02	7.5E+03	--	--	2.5E-01	4.4E+00	--	--	4.2E+01
Chlordane ^c	0	2.4E+00	4.3E-03	2.1E-02	2.2E-02	8.8E+00	2.8E-01	3.6E+00	3.7E+00	6.0E-01	1.1E-03	2.1E-03	2.2E-03	3.2E+01	7.0E-02	3.6E-01
Chloride	0	8.6E+05	2.3E+05	2.5E+05	--	3.2E+06	1.5E+07	2.1E+07	--	2.2E+05	5.8E+04	2.5E+04	--	3.2E+06	3.7E+06	2.1E+06
TRC	0	1.9E+01	1.1E+01	--	--	7.0E+01	7.1E+02	--	--	4.8E+00	2.8E+00	--	--	7.0E+01	1.8E+02	--
Chlorobenzene	0	--	--	6.8E+02	2.1E+04	--	--	5.6E+04	1.7E+06	--	--	6.8E+01	2.1E+03	--	--	5.6E+03

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)
Chlorodibromomethane ^g	0	--	--	4.1E+00	3.4E+02	--	--	7.0E+02	5.8E+04	--	--	4.1E-01	3.4E+01	--	--	7.0E+01
Chloroform ^c	0	--	--	3.5E+02	2.9E+04	--	--	5.9E+04	4.9E+06	--	--	3.9E+01	2.9E+03	--	--	5.9E+03
2-Chloronaphthalene	0	--	--	1.7E+03	4.3E+03	--	--	1.4E+05	3.6E+05	--	--	1.7E+02	4.3E+02	--	--	1.4E+04
2-Chlorophenol	0	--	--	1.2E+02	4.0E+02	--	--	9.9E+03	3.3E+04	--	--	1.2E+01	4.0E+01	--	--	9.9E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	--	--	3.1E-01	2.7E+00	--	--	2.1E-02	1.0E-02	--	--	3.1E-01	6.6E-01	--
Chromium III	0	6.0E+02	7.4E+01	--	--	2.2E+03	4.8E+03	--	--	1.4E+02	1.9E+01	--	--	2.2E+03	1.2E+03	--
Chromium VI	0	1.6E+01	1.1E+01	--	--	5.9E+01	7.1E+02	--	--	4.0E+00	2.8E+00	--	--	5.9E+01	1.8E+02	--
Chromium, Total	0.18	--	--	1.0E+02	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene ^c	0	--	--	4.4E-02	4.9E-01	--	--	7.5E+00	8.3E+01	--	--	4.4E-03	4.9E-02	--	--	8.3E+02
Copper	0.65	1.4E+01	9.0E+00	1.3E+03	--	5.1E+01	5.4E+02	1.1E+05	--	3.9E+00	2.7E+00	1.3E+02	--	5.1E+01	1.4E+02	7.5E-01
Cyanide	0	2.2E+01	5.2E+00	7.0E+02	2.2E+05	8.1E+01	3.4E+02	5.8E+04	1.8E+07	5.5E+00	1.3E+00	7.0E+01	2.2E+04	8.1E+01	8.4E+01	1.8E+06
DDD ^c	0	--	--	8.3E-03	8.4E-03	--	--	1.4E+00	1.4E+00	--	--	8.3E-04	8.4E-04	--	--	1.4E-01
DDE ^c	0	--	--	5.9E-03	5.9E-03	--	--	1.0E+00	1.0E+00	--	--	5.9E-04	5.9E-04	--	--	1.0E-01
DDT ^c	0	1.1E+00	1.0E-03	5.9E-03	5.9E-03	4.0E+00	6.5E-02	1.0E+00	1.0E+00	2.9E-01	2.5E-04	5.9E-04	5.9E-04	4.0E+00	1.6E-02	1.0E-01
Demeton	0	--	1.0E-01	--	--	--	6.5E+00	--	--	--	2.5E-02	--	--	--	1.6E+00	--
Dibenz(a,h)anthracene ^c	0	--	--	4.4E-02	4.9E-01	--	--	7.5E+00	8.3E+01	--	--	4.4E-03	4.9E-02	--	--	7.5E-01
Dibutyl phthalate	0	--	--	2.7E+03	1.2E+04	--	--	2.2E+05	9.9E+05	--	--	2.7E+02	1.2E+03	--	--	2.2E+04
Dichloromethane	0	--	--	4.7E+01	1.6E+04	--	--	8.0E+03	2.7E+06	--	--	4.7E+00	1.6E+03	--	--	8.0E+02
(Methylene Chloride) ^c	0	--	--	2.7E+03	1.7E+04	--	--	2.2E+05	1.4E+06	--	--	2.7E+02	1.7E+03	--	--	2.2E+04
1,2-Dichlorobenzene	0	--	--	4.0E+02	2.6E+03	--	--	3.3E+04	2.2E+05	--	--	4.0E+01	2.6E+02	--	--	3.3E+03
1,3-Dichlorobenzene	0	--	--	4.0E+02	2.6E+03	--	--	3.3E+04	2.2E+05	--	--	4.0E+01	2.6E+02	--	--	3.3E+03
1,4-Dichlorobenzene	0	--	--	4.0E+01	7.7E-01	--	--	6.8E+01	1.3E+02	--	--	4.0E-02	7.7E-02	--	--	6.8E+00
3,3-Dichlorobenzidine ^g	0	--	--	5.6E+00	4.8E+02	--	--	9.5E+02	7.8E+04	--	--	5.6E-01	4.6E+01	--	--	9.5E+01
Dichlorobromomethane ^c	0	--	--	3.8E+00	9.9E+02	--	--	6.5E+02	1.7E+05	--	--	3.8E-01	9.9E+01	--	--	6.5E+01
1,2-Dichloroethane ^c	0	--	--	3.1E+02	1.7E+04	--	--	2.6E+04	1.4E+06	--	--	3.1E+01	1.7E+03	--	--	2.6E+03
1,1-Dichloroethylene	0	--	--	7.0E+02	1.4E+05	--	--	5.8E+04	1.2E+07	--	--	7.0E+01	1.4E+04	--	--	5.8E+03
1,2-trans-dichloroethylene	0	--	--	9.3E+01	7.9E+02	--	--	7.7E+03	6.5E+04	--	--	9.3E+00	7.9E+01	--	--	7.7E+02
2,4-Dichlorophenol	0	--	--	1.0E+02	--	--	--	8.3E+03	--	--	--	1.0E+01	--	--	--	8.3E+02
acetic acid (2,4-D)	0	--	--	5.2E+00	3.9E+02	--	--	8.8E+02	6.6E+04	--	--	5.2E-01	3.9E+01	--	--	8.8E+01
1,2-Dichloropropane ^g	0	--	--	1.0E+01	1.7E+03	--	--	8.3E+02	1.4E+05	--	--	1.0E+00	1.7E+02	--	--	8.3E+01
1,3-Dichloropropene	0	--	--	1.4E+03	1.4E-03	8.8E-01	3.6E+00	2.4E-01	2.4E-01	6.0E-02	1.4E-02	1.4E-04	1.4E-04	8.8E-01	9.1E-01	2.4E-02
Dieldrin ^c	0	--	--	2.3E+04	1.2E+05	--	--	1.9E+06	9.9E+06	--	--	2.3E+03	1.2E+04	--	--	1.9E+05
Diethyl Phthalate	0	--	--	1.8E+01	5.9E+01	--	--	3.1E+03	1.0E+04	--	--	1.8E+00	5.9E+00	--	--	3.1E+02
Di-2-Ethylhexyl Phthalate ^c	0	--	--	5.4E+02	2.3E+03	--	--	4.5E+04	1.9E+05	--	--	5.4E+01	2.3E+02	--	--	4.5E+03
2,4-Dimethylphenol	0	--	--	3.1E+05	2.9E+06	--	--	2.2E+05	9.9E+05	--	--	3.1E+04	2.9E+05	--	--	2.2E+04
Dimethyl Phthalate	0	--	--	2.7E+03	1.2E+04	--	--	5.8E+03	1.2E+06	--	--	2.7E+02	1.2E+03	--	--	5.8E+02
Di-n-Butyl Phthalate	0	--	--	7.0E+01	1.4E+04	--	--	7.0E+00	1.4E+03	--	--	7.0E+00	1.4E+03	--	--	7.0E+00
2,4 Dinitrophenol	0	--	--	1.3E+01	7.85E+02	--	--	1.1E+03	6.3E+04	--	--	1.3E+00	7.7E+01	--	--	1.1E+02
2-Methyl-4,6-Dinitrophenol	0	--	--	1.1E+00	9.1E+01	--	--	1.9E+02	1.5E+04	--	--	1.1E-01	9.1E+00	--	--	1.9E+01
2,4-Dinitrotoluene ^c	0	--	--	1.2E+06	1.2E+06	--	--	1.2E+06	1.2E+06	--	--	1.2E+06	1.2E+06	--	--	1.2E+06
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin)	0	--	--	4.0E-01	5.4E+00	--	--	6.8E+01	9.2E+02	--	--	4.0E-02	5.4E-01	--	--	6.8E+00
(ppt)	0	--	--	5.6E-02	1.1E+02	8.1E-01	3.6E+00	9.1E+03	2.0E+04	5.5E-02	1.4E-02	1.1E+01	2.4E+01	8.1E-01	9.1E-01	9.2E+01
1,2-Diphenylhydrazine ^g	0	2.2E-01	5.6E-02	1.1E+02	2.4E+02	8.1E-01	3.6E+00	9.1E+03	2.0E+04	5.5E-02	1.4E-02	1.1E+01	2.4E+01	8.1E-01	9.1E-01	9.2E+01
Alpha-Endosulfan	0	2.2E-01	5.6E-02	1.1E+02	2.4E+02	8.1E-01	3.6E+00	9.1E+03	2.0E+04	5.5E-02	1.4E-02	1.1E+01	2.4E+01	8.1E-01	9.1E-01	9.2E+01
Beta-Endosulfan	0	--	--	1.1E+02	2.4E+02	--	--	9.1E+03	2.0E+04	--	--	9.1E+02	2.0E+03	--	--	9.1E+02
Endosulfan Sulfate	0	8.6E-02	3.6E-02	7.6E-01	8.1E-01	3.2E-01	2.3E+00	6.3E+01	6.7E+01	2.2E-02	9.0E-03	7.8E-02	8.1E-02	3.2E-01	5.8E-01	6.7E+00
Endrin	0	--	--	7.6E-01	8.1E-01	--	--	6.3E+01	6.7E+01	--	--	6.3E+00	6.7E+00	--	--	6.3E+00
Endrin Aldehyde	0	--	--	7.6E-01	8.1E-01	--	--	6.3E+01	6.7E+01	--	--	6.3E+00	6.7E+00	--	--	6.3E+00

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	3.1E+03	2.9E+04	--	--	2.6E+05	2.4E+06	--	--	3.1E+02	2.9E+03	--	--	2.6E+04	2.4E+05	--	--	2.6E+04	2.4E+05
Fluoranthene	0	--	--	3.0E+02	3.7E+02	--	--	2.5E+04	3.1E+04	--	--	3.0E+01	3.7E+01	--	--	2.5E+03	3.1E+03	--	--	2.5E+03	3.1E+03
Fluorene	0	--	--	1.3E+03	1.4E+04	--	--	1.1E+05	1.2E+06	--	--	1.3E+02	1.4E+03	--	--	1.1E+04	1.2E+05	--	--	1.1E+04	1.2E+05
Foaming Agents	0	--	--	5.0E+02	--	--	--	4.1E+04	--	--	--	5.0E+01	--	--	--	4.1E+03	--	--	--	4.1E+03	--
Guthion	0	--	1.0E-02	--	--	--	6.5E-01	--	--	--	2.5E-03	--	--	--	1.6E-01	--	--	--	1.6E-01	--	--
Heptachlor ^c	0	5.2E-01	3.8E-03	2.1E-03	2.1E-03	1.9E+00	2.5E-01	3.6E-01	3.6E-01	1.3E-01	9.5E-04	2.1E-04	2.1E-04	6.8E+00	6.1E-02	3.6E-02	3.6E-02	1.3E+00	6.1E-02	3.6E-02	3.6E-02
Heptachlor Epoxide ^f	0	5.2E-01	3.8E-03	1.0E-03	1.1E-03	1.9E+00	2.5E-01	1.7E-01	1.9E-01	1.3E-01	9.5E-04	1.0E-04	1.1E-04	6.8E+00	6.1E-02	1.7E-02	1.9E-02	1.3E+00	6.1E-02	1.7E-02	1.9E-02
Hexachlorobenzene ^f	0	--	--	7.5E-03	7.7E-03	--	--	1.3E+00	1.3E+00	--	--	7.5E-04	7.7E-04	--	--	1.3E-01	1.3E-01	--	--	1.3E-01	1.3E-01
Hexachlorobutadiene ^f	0	--	--	4.4E+00	5.0E+02	--	--	7.5E+02	8.5E+04	--	--	4.4E-01	5.0E+01	--	--	7.5E+01	8.5E+03	--	--	7.5E+01	8.5E+03
Hexachlorocyclohexane	0	--	--	3.9E-02	1.3E-01	--	--	6.6E+00	2.2E+01	--	--	3.9E-03	1.3E-02	--	--	6.6E-01	2.2E+00	--	--	6.6E-01	2.2E+00
Hexachlorocyclohexane	0	--	--	1.4E-01	4.5E-01	--	--	2.4E+01	7.8E+01	--	--	1.4E-02	4.6E-02	--	--	2.4E+00	7.8E+00	--	--	2.4E+00	7.8E+00
Hexachlorocyclohexane Gamma-BHC ^c (Lindane)	0	9.5E-01	--	1.9E-01	6.3E-01	3.5E+00	--	3.2E+01	1.1E+02	2.4E-01	--	1.9E-02	6.3E-02	1.3E+01	--	3.2E+00	1.1E+01	3.5E+00	--	3.2E+00	1.1E+01
Hexachlorocyclopentadiene	0	--	--	2.4E+02	1.7E+04	--	--	2.0E+04	1.4E+06	--	--	2.4E+01	1.7E+03	--	--	2.0E+03	1.4E+05	--	--	2.0E+03	1.4E+05
Hexachloroethane ^f	0	--	--	1.9E+01	8.9E+01	--	--	3.2E+03	1.5E+04	--	--	1.9E+00	8.9E+00	--	--	3.2E+02	1.5E+03	--	--	3.2E+02	1.5E+03
Hydrogen Sulfide	0	--	2.0E+00	--	--	--	1.3E+02	--	--	--	5.0E-01	--	--	--	3.2E+01	--	--	--	3.2E+01	--	--
Indeno (1,2,3-cd) pyrene ^c	0	--	--	4.4E-02	4.9E-01	--	--	7.5E+00	8.3E+01	--	--	4.4E-03	4.9E-02	--	--	7.5E-01	8.3E+00	--	--	7.5E-01	8.3E+00
Iron	0	--	--	3.0E+02	--	--	2.5E+04	--	--	--	3.0E+01	--	--	--	--	2.5E+03	--	--	--	2.5E+03	--
Isophorone ^f	0	--	--	3.6E+02	2.6E+04	--	--	6.1E+04	4.4E+06	--	--	3.6E+01	2.6E+03	--	--	6.1E+03	4.4E+05	--	--	6.1E+03	4.4E+05
Kepon ^e	0	--	0.0E+00	--	--	--	0.0E+00	--	--	--	0.0E+00	--	--	--	0.0E+00	--	--	--	0.0E+00	--	--
Lead	0	1.3E+02	1.4E+01	1.5E+01	--	4.7E+02	8.8E+02	1.2E+03	--	3.0E+01	3.4E+00	1.5E+00	--	1.6E+03	2.2E+02	1.2E+02	--	4.7E+02	2.2E+02	1.2E+02	--
Malathion	0	--	1.0E-01	--	--	--	6.5E+00	--	--	--	2.5E-02	--	--	--	1.6E+00	--	--	--	1.6E+00	--	--
Manganese	14.32	--	--	5.0E+01	--	--	3.0E+03	--	--	--	1.8E+01	--	--	--	--	3.1E+02	--	--	--	3.1E+02	--
Mercury	0	1.4E+00	7.7E-01	5.0E-02	5.1E-02	5.2E+00	5.0E+01	4.1E+00	4.2E+00	3.5E-01	1.9E-01	5.0E-03	5.1E-03	1.8E+01	1.2E+01	4.1E-01	4.2E-01	5.2E+00	1.2E+01	4.1E-01	4.2E-01
Methyl Bromide	0	--	--	4.8E+01	4.0E+03	--	--	4.0E+03	3.3E+05	--	--	4.8E+00	4.0E+02	--	--	4.0E+02	3.3E+04	--	--	4.0E+02	3.3E+04
Methoxychlor	0	--	3.0E-02	1.0E+02	--	--	1.9E+00	8.3E+03	--	--	7.5E-03	1.0E+01	--	--	4.9E-01	8.3E+02	--	--	4.9E-01	8.3E+02	--
Mirex	0	--	0.0E+00	--	--	--	0.0E+00	--	--	--	0.0E+00	--	--	--	0.0E+00	--	--	--	0.0E+00	--	--
Monochlorobenzene	0	--	--	6.8E-02	2.1E+04	--	--	5.6E+04	1.7E+06	--	--	6.8E+01	2.1E+03	--	--	5.6E+03	1.7E+05	--	--	5.6E+03	1.7E+05
Nickel	0.05	1.9E+02	2.0E+01	6.1E+02	4.8E+03	7.1E+02	1.3E+03	5.1E+04	3.8E+05	4.6E+01	5.1E+00	6.1E+01	4.6E+02	2.4E+03	3.3E+02	5.1E+03	3.8E+04	7.1E+02	3.3E+02	5.1E+03	3.8E+04
Nitrate (as N)	0	--	--	1.0E+04	--	--	--	8.3E+05	--	--	1.0E+03	--	--	--	--	8.3E+04	--	--	--	8.3E+04	--
Nitrobenzene	0	--	--	1.7E+01	1.9E+03	--	--	1.4E+03	1.6E+05	--	--	1.7E+00	1.9E+02	--	--	1.4E+02	1.6E+04	--	--	1.4E+02	1.6E+04
N-Nitrosodimethylamine ^f	0	--	--	6.9E-03	8.1E+01	--	--	1.2E+00	1.4E+04	--	--	6.9E-04	8.1E+00	--	--	1.2E-01	1.4E+03	--	--	1.2E-01	1.4E+03
N-Nitrosodiphenylamine ^f	0	--	--	5.0E+01	1.6E+02	--	--	8.5E+03	2.7E+04	--	--	5.0E+00	1.6E+01	--	--	8.5E+02	2.7E+03	--	--	8.5E+02	2.7E+03
N-Nitrosodi-n-propylamine ^f	0	--	--	5.0E-02	1.4E+01	--	--	8.5E+00	2.4E+03	--	--	5.0E-03	1.4E+00	--	--	8.5E-01	2.4E+02	--	--	8.5E-01	2.4E+02
Parathion	0	6.5E-02	1.3E-02	--	--	2.4E-01	8.4E-01	--	--	1.6E-02	3.3E-03	--	--	8.6E-01	2.1E-01	--	--	2.4E-01	2.1E-01	--	--
PCB-1016	0	--	1.4E-02	--	--	--	9.1E-01	--	--	--	3.5E-03	--	--	--	2.3E-01	--	--	--	2.3E-01	--	--
PCB-1221	0	--	1.4E-02	--	--	--	9.1E-01	--	--	--	3.5E-03	--	--	--	2.3E-01	--	--	--	2.3E-01	--	--
PCB-1232	0	--	1.4E-02	--	--	--	9.1E-01	--	--	--	3.5E-03	--	--	--	2.3E-01	--	--	--	2.3E-01	--	--
PCB-1242	0	--	1.4E-02	--	--	--	9.1E-01	--	--	--	3.5E-03	--	--	--	2.3E-01	--	--	--	2.3E-01	--	--
PCB-1248	0	--	1.4E-02	--	--	--	9.1E-01	--	--	--	3.5E-03	--	--	--	2.3E-01	--	--	--	2.3E-01	--	--
PCB-1254	0	--	1.4E-02	--	--	--	9.1E-01	--	--	--	3.5E-03	--	--	--	2.3E-01	--	--	--	2.3E-01	--	--
PCB-1260	0	--	1.4E-02	--	--	--	9.1E-01	--	--	--	3.5E-03	--	--	--	2.3E-01	--	--	--	2.3E-01	--	--
PCB Total ^f	0	--	--	1.7E-03	1.7E-03	--	--	2.9E-01	2.9E-01	--	--	1.7E-04	1.7E-04	--	--	2.9E-02	2.9E-02	--	--	2.9E-02	2.9E-02

Parameter (ug/l unless noted) ^c	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)
Pentachlorophenol ^c	0	7.9E+00	6.6E+00	2.8E+00	8.2E+01	2.9E+01	4.3E+02	4.8E+02	1.4E+04	2.2E+00	1.7E+00	2.8E+01	8.2E+00	2.9E+01	1.1E+02	1.4E+03
Phenol	0	-	-	2.1E+04	4.8E+06	-	-	1.7E+06	3.8E+08	-	-	2.1E+03	4.6E+05	-	-	1.7E+05
Pyrene	0	-	-	9.6E+02	1.1E+04	-	-	8.0E+04	9.1E+05	-	-	9.6E+01	1.1E+03	-	-	8.0E+03
Radionuclides (pCi/l except Beta/Photon)	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gross Alpha Activity	0	-	-	1.5E+01	1.5E+01	-	-	-	1.2E+03	-	-	1.5E+00	1.5E+00	-	-	1.2E+02
Beta and Photon Activity (mrem/yr)	0	-	-	4.0E+00	4.0E+00	-	-	-	3.3E+02	-	-	4.0E-01	4.0E-01	-	-	3.3E+01
Strontium-90	0	-	-	8.0E+00	8.0E+00	-	-	-	6.6E+02	-	-	8.0E-01	8.0E-01	-	-	6.6E+01
Tritium	0	-	-	2.0E+04	2.0E+04	-	-	-	1.7E+06	-	-	2.0E+03	2.0E+03	-	-	1.7E+05
Selenium	0	2.0E+01	5.0E+00	1.7E+02	1.1E+04	7.4E+01	3.2E+02	1.4E+04	9.1E+05	5.0E+00	1.3E+00	1.7E+01	1.1E+03	7.4E+01	8.1E+01	1.4E+03
Silver	0	3.8E+00	-	-	-	1.4E+01	-	-	-	8.7E-01	-	-	-	1.4E+01	-	-
Sulfate	0	-	-	2.5E+05	-	-	-	2.1E+07	-	-	-	2.5E+04	-	-	-	2.1E+06
1,1,2,2-Tetrachloroethane	0	-	-	1.7E+00	1.1E+02	-	-	2.9E+02	1.9E+04	-	-	1.7E-01	1.1E+01	-	-	2.9E+01
Tetrachloroethylene	0	-	-	8.0E+00	8.9E+01	-	-	1.4E+03	1.5E+04	-	-	8.0E-01	8.9E+00	-	-	1.4E+02
Thallium	0	-	-	1.7E+00	6.3E+00	-	-	1.4E+02	5.2E+02	-	-	1.7E-01	6.3E-01	-	-	1.4E+01
Toluene	0	-	-	6.8E+03	2.0E+05	-	-	5.6E+05	1.7E+07	-	-	6.8E+02	2.0E+04	-	-	5.6E+04
Total dissolved solids	0	-	-	5.0E+05	-	-	-	4.1E+07	-	-	-	5.0E+04	-	-	-	4.1E+06
Toxaphene ^c	0	7.3E-01	2.0E-04	7.3E-03	7.5E-03	2.7E+00	1.3E-02	1.2E+00	1.3E+00	1.8E-01	5.0E-05	7.3E-04	7.5E-04	2.7E+00	3.2E-03	1.2E-01
Tributyltin	0	4.6E-01	6.3E-02	-	-	1.7E+00	4.1E+00	-	-	1.2E-01	1.8E-02	-	-	1.7E+00	1.0E+00	-
1,2,4-Trichlorobenzene	0	-	-	2.6E+02	9.4E+02	-	-	2.2E+04	7.8E+04	-	-	2.6E+01	9.4E+01	-	-	2.2E+03
1,1,2-Trichloroethane	0	-	-	6.0E+00	4.2E+02	-	-	1.0E+03	7.1E+04	-	-	6.0E-01	4.2E+01	-	-	1.0E+02
Trichloroethylene ^c	0	-	-	2.7E+01	8.1E+02	-	-	4.6E+03	1.4E+05	-	-	2.7E+00	8.1E+01	-	-	4.6E+02
2,4,6-Trichlorophenol ^c	0	-	-	2.1E+01	6.5E+01	-	-	3.6E+03	1.1E+04	-	-	2.1E+00	6.5E+00	-	-	3.6E+02
2-(2,4,5-Trichlorophenoxy)propionic acid (Silvex)	0	-	-	5.0E+01	-	-	-	4.1E+03	-	-	-	5.0E+00	-	-	-	4.1E+02
Vinyl Chloride ^c	0	-	-	2.3E-01	6.1E+01	-	-	3.9E+01	1.0E+04	-	-	2.3E-02	6.1E+00	-	-	3.9E+00
Zinc	3.68	1.2E+02	1.2E+02	9.1E+03	6.9E+04	4.4E+02	7.4E+03	7.5E+05	5.7E+06	3.2E+01	3.2E+01	9.1E+02	6.9E+03	4.4E+02	1.9E+03	7.5E+04

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipal
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information. Antidegradation WLAs are based upon a complete mix.
Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
= (0.1(WQC - background conc.) + background conc.) for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

Metal	Target Value (SSTV)
Antimony	1.2E+02
Arsenic	8.0E+01
Barium	1.7E+04
Cadmium	6.2E+00
Chromium III	7.2E+02
Chromium VI	2.4E+01
Copper	2.0E+01
Iron	2.5E+03
Lead	1.2E+02
Manganese	3.1E+02
Mercury	4.1E-01
Nickel	2.0E+02
Selenium	2.9E+01
Silver	5.6E+00
Zinc	1.8E+02

Note: do not use QL's lower than the minimum QL's provided in agency guidance

4/23/2009 1:42:28 PM

Facility = Lower Stroubles Creek WWTP - VA0060844

Chemical = TRC

Chronic averaging period = 4

WLAa = 70

WLAc = 710

Q.L. = 100

samples/mo. = 30

samples/wk. = 8

Summary of Statistics:

observations = 1

Expected Value = 4000

Variance = 5760000

C.V. = 0.6

97th percentile daily values = 9733.67

97th percentile 4 day average = 6655.16

97th percentile 30 day average = 4824.21

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity

Maximum Daily Limit = 70

Average Weekly limit = 41.7553560131556

Average Monthly Limit = 34.6934814707375

The data are:

4000

4/29/2009 9:45:03 AM

Facility = Lower Stroubles Creek WTP

Chemical = Copper

Chronic averaging period = 4

WLAa = 51

WLAc = 54

Q.L. = 10

samples/mo. = 1

samples/wk. = 1

Summary of Statistics:

observations = 1

Expected Value = 13

Variance = 60.84

C.V. = 0.6

97th percentile daily values = 31.6344

97th percentile 4 day average = 21.6292

97th percentile 30 day average = 15.6786

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

13

4/29/2009 9:45:57 AM

Facility = Lower Stroubles Creek WTP

Chemical = Chloroform

Chronic averaging period = 4

WLAa = 59000

WLAc = 4900000

Q.L. = 10

samples/mo. = 1

samples/wk. = 1

Summary of Statistics:

observations = 1

Expected Value = 44

Variance = 696.96

C.V. = 0.6

97th percentile daily values = 107.070

97th percentile 4 day average = 73.2067

97th percentile 30 day average = 53.0663

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

44

4/29/2009 9:46:45 AM

Facility = Lower Stroubles Creek WTP

Chemical = Zinc

Chronic averaging period = 4

WLAa = 440

WLAc = 7400

Q.L. = 10

samples/mo. = 1

samples/wk. = 1

Summary of Statistics:

observations = 1

Expected Value = 55

Variance = 1089

C.V. = 0.6

97th percentile daily values = 133.837

97th percentile 4 day average = 91.5084

97th percentile 30 day average = 66.3329

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

55

Model Results
Previous 3/2/95 Mod.
Lower Stroubles Creek STP

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY

ROANOKE WATER REGIONAL OFFICE

P. O. Box 7017
Roanoke, VA 24019

703/562-3666

MEMORANDUM

Subject: Pepper's Ferry STP (+ Blacksburg → Lower Stroubles^{Creek} STP)
Regional Model Version 3.2 Results

To: File

From: James D. Scott, ^{MD} Environmental Engineer

Date: May 10, 1994

Copies:

Several model (Version 3.2) runs were initiated due to concerns over the Blacksburg-VPI and Pepper's Ferry STP's antidegradation issues concerning DO in the New River.

These model runs did not account for the RAAP facility discharges. Since the RAAP facilities were discharging to the New River in this stretch prior to 1972, the impacts associated with the RAAP discharges were not considered in this analysis of the impacts of the Pepper's Ferry and Blacksburg discharges. Also, please note that the complexities associated with modeling this section of the New River are probably beyond the capabilities of the regional modeling system version 3.2. Nonetheless, I feel that the results are somewhat indicative of the situation we are currently reviewing.

Many runs were made using the "traditional" approach to inputs to the model. Specifically, the entire 7Q10 and the maximum weekly loads were input, and the results showed no DO depletion (i.e. antidegradation is complied with). Several additional runs were made with various fluctuations in loadings. One run used the BOD of 90 mg/l for Pepper's Ferry (9 MD), and 36 mg/l (9 MGD) for Blacksburg, and showed no significant impact to instream DO's.

In light of the fact that the previous model for Blacksburg was run at 1/2 7Q10 due to mixing issues, an additional model was run at a 7Q10 of 307 MGD (7Q10 = 614 MGD). This run was made at a BOD of 45 mg/l (9MGD) for Pepper's Ferry, and 36 mg/l BOD (9MGD) for Blacksburg. Again the model predicted no significant in stream DO depletion, and indicates that antidegradation, as defined in the **Guidance Memo 93-015**, and in terms of BOD, is complied with by allowing Blacksburg to remain at 24 mg/l BOD (9MGD) and allowing Pepper's Ferry to remain at 30 mg/l BOD, monthly average.

REGIONAL MODELING SYSTEM
DATA FILE SUMMARY

VERSION 3.2

THE NAME OF THE DATA FILE IS: PEPXXX.MOD

THE STREAM NAME IS: NEW RIVER
THE RIVER BASIN IS: NEW RIVER
THE SECTION NUMBER IS: 2a
THE CLASSIFICATION IS: IV

STANDARDS VIOLATED (Y/N) = N
STANDARDS APPROPRIATE (Y/N) = Y

DISCHARGE WITHIN 3 MILES (Y/N) = N

THE DISCHARGE BEING MODELED IS: PEPPER'S FERRY STP

PROPOSED LIMITS ARE:

FLOW = 9 MGD
BOD5 = 45 MG/L
TKN = 10 MG/L
D.O. = 6 MG/L

THE NUMBER OF SEGMENTS TO BE MODELED = 2

7Q10 WILL BE CALCULATED BY: FLOW COMPARISON

THE GAUGE NAME IS: 1/2 WQAP FLOW TABLE
GAUGE DRAINAGE AREA = 2790 SQ.MI.
OBSERVED FLOW AT GAUGE = 307 MGD
GAUGE 7Q10 = 307 MGD
OBSERVED FLOW AT DISCHARGE = 307 MGD

STREAM A DRY DITCH AT DISCHARGE (Y/N) = N
ANTIDEGRADATION APPLIES (Y/N) = Y

ALLOCATION DESIGN TEMPERATURE = 24 $\frac{1}{2}$ C

MAX LOADS

$\frac{1}{2}$ 7Q10

SEGMENT INFORMATION

SEGMENT # 1

SEGMENT ENDS BECAUSE: A DISCHARGE ENTERS AT END

SEGMENT LENGTH = 2.175 MI

SEGMENT WIDTH = 150 FT

SEGMENT DEPTH = 5 FT

SEGMENT VELOCITY = 1 FT/SEC

DRAINAGE AREA AT SEGMENT START = 2790 SQ.MI.

DRAINAGE AREA AT SEGMENT END = 2817 SQ.MI.

ELEVATION AT UPSTREAM END = 1725 FT

ELEVATION AT DOWNSTREAM END = 1675 FT

THE CROSS SECTION IS: IRREGULAR

THE CHANNEL IS: MODERATELY MEANDERING

POOLS AND RIFFLES (Y/N) = Y

THE SEGMENT LENGTH IS 75 % POOLS

POOL DEPTH = 6 FT

THE SEGMENT LENGTH IS 25 % RIFFLES

RIFFLE DEPTH = 2 FT

THE BOTTOM TYPE = BOULDERS

SLUDGE DEPOSITS = NONE

AQUATIC PLANTS = FEW

ALGAE OBSERVED = NONE

WATER COLORED GREEN (Y/N) = N

THE DISCHARGE AT THE SEGMENT END IS: BLACKSBURG STP

ITS CONCENTRATIONS ARE:

FLOW = 9 MGD

BOD5 = 36 MG/L

TKN = 15 MG/L

D.O. = 6.6 MG/L

| 1720

2 1710

SEGMENT INFORMATION

SEGMENT # 2

SEGMENT ENDS BECAUSE: THE MODEL ENDS

SEGMENT LENGTH = 3 MI

SEGMENT WIDTH = 200 FT

SEGMENT DEPTH = 3 FT

SEGMENT VELOCITY = 1 FT/SEC

DRAINAGE AREA AT SEGMENT START = 2817 SQ.MI.

DRAINAGE AREA AT SEGMENT END = 2862 SQ.MI.

ELEVATION AT UPSTREAM END = 1675 FT

ELEVATION AT DOWNSTREAM END = 1625 FT

THE CROSS SECTION IS: IRREGULAR

THE CHANNEL IS: MODERATELY MEANDERING

POOLS AND RIFFLES (Y/N) = Y

THE SEGMENT LENGTH IS 25 % POOLS

POOL DEPTH = 6 FT

THE SEGMENT LENGTH IS 75 % RIFFLES

RIFFLE DEPTH = 2 FT

THE BOTTOM TYPE = BOULDERS

SLUDGE DEPOSITS = NONE

AQUATIC PLANTS = HEAVY

ALGAE OBSERVED = COVERS ENTIRE BOTTOM

WATER COLORED GREEN (Y/N) = N

REGIONAL MODELING SYSTEM Ver 3.2 (OWRM - 9/90)
08-26-1994 15:11:42

REGIONAL MODELING SYSTEM VERSION 3.2

MODEL SIMULATION FOR THE PEPPER'S FERRY STP DISCHARGE
TO NEW RIVER

COMMENT: MODEL RUN WITHOUT RAAP DISCHARGES

THE SIMULATION STARTS AT THE PEPPER'S FERRY STP DISCHARGE

***** PROPOSED PERMIT LIMITS *****

FLOW = 9 MGD cBOD5 = 45 Mg/L TKN = 10 Mg/L D.O. = 6 Mg/L

**** THE MAXIMUM CHLORINE ALLOWABLE IN THE DISCHARGE IS 0.386 Mg/L ****

THE SECTION BEING MODELED IS BROKEN INTO 2 SEGMENTS
RESULTS WILL BE GIVEN AT 0.1 MILE INTERVALS

***** BACKGROUND CONDITIONS *****

THE 7Q10 STREAM FLOW AT THE DISCHARGE IS 307.00000 MGD
THE DISSOLVED OXYGEN OF THE STREAM IS 7.173 Mg/L
THE BACKGROUND cBODu OF THE STREAM IS 5 Mg/L
THE BACKGROUND nBOD OF THE STREAM IS 0 Mg/L

***** MODEL PARAMETERS *****

SEG.	LEN. Mi	VEL. F/S	K2 1/D	K1 1/D	KN 1/D	BENTHIC Mg/L	ELEV. Ft	TEMP. ½C	DO-SAT Mg/L
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1	2.17	1.217	13.793	0.800	0.350	0.000	1700.00	24.00	7.970
2	3.00	0.834	10.000	0.800	0.350	0.000	1650.00	24.00	7.984

(The K Rates shown are at 20½C ... the model corrects them for temperature.)

RESPONSE FOR SEGMENT 1

TOTAL STREAMFLOW = 316.0000 MGD
(Including Discharge)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBODu (Mg/L)	nBODu (Mg/L)
0.000	0.000	7.139	8.062	0.863
0.100	0.100	7.161	8.023	0.861
0.200	0.200	7.173	7.984	0.859
0.300	0.300	7.173	7.946	0.857
0.400	0.400	7.173	7.907	0.855
0.500	0.500	7.173	7.869	0.853
0.600	0.600	7.173	7.832	0.851
0.700	0.700	7.173	7.794	0.849
0.800	0.800	7.173	7.756	0.847
0.900	0.900	7.173	7.719	0.845
1.000	1.000	7.173	7.682	0.843
1.100	1.100	7.173	7.645	0.841
1.200	1.200	7.173	7.608	0.839
1.300	1.300	7.173	7.571	0.837
1.400	1.400	7.173	7.535	0.835
1.500	1.500	7.173	7.498	0.833
1.600	1.600	7.173	7.462	0.831
1.700	1.700	7.173	7.426	0.829
1.800	1.800	7.173	7.391	0.827
1.900	1.900	7.173	7.355	0.825
2.000	2.000	7.173	7.320	0.823
2.100	2.100	7.173	7.284	0.821
2.175	2.175	7.173	7.258	0.820

FOR THE DISCHARGE AT THE END OF SEGMENT 1

DISCHARGER = BLACKSBURG STP

FLOW = 9 MGD cBOD5 = 36 Mg/L TKN = 15 Mg/L D.O. = 6.6 Mg/L

FLOW FROM INCREMENTAL DRAINAGE AREA = 2.9710 MGD

RESPONSE FOR SEGMENT 2

TOTAL STREAMFLOW = 327.9710 MGD

(Including Discharge, Tributaries and Incremental D.A. Flow)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBODu (Mg/L)	nBODu (Mg/L)
0.000	2.175	7.157	9.508	2.215
0.100	2.275	7.149	9.441	2.208
0.200	2.375	7.143	9.375	2.200
0.300	2.475	7.138	9.309	2.192
0.400	2.575	7.133	9.244	2.185
0.500	2.675	7.129	9.179	2.177
0.600	2.775	7.126	9.115	2.170
0.700	2.875	7.124	9.051	2.162
0.800	2.975	7.122	8.987	2.154
0.900	3.075	7.121	8.924	2.147
1.000	3.175	7.121	8.861	2.139
1.100	3.275	7.121	8.799	2.132
1.200	3.375	7.121	8.738	2.125
1.300	3.475	7.122	8.676	2.117
1.400	3.575	7.123	8.615	2.110
1.500	3.675	7.124	8.555	2.102
1.600	3.775	7.126	8.495	2.095
1.700	3.875	7.128	8.435	2.088
1.800	3.975	7.131	8.376	2.080
1.900	4.075	7.133	8.317	2.073
2.000	4.175	7.136	8.259	2.066
2.100	4.275	7.139	8.201	2.059
2.200	4.375	7.142	8.143	2.052
2.300	4.475	7.146	8.086	2.045
2.400	4.575	7.149	8.029	2.037
2.500	4.675	7.153	7.973	2.030
2.600	4.775	7.157	7.917	2.023
2.700	4.875	7.161	7.861	2.016
2.800	4.975	7.165	7.806	2.009
2.900	5.075	7.169	7.751	2.002
3.000	5.175	7.173	7.697	1.995

REGIONAL MODELING SYSTEM

Ver 3.2 (OWRM - 9/90)

08-26-1994 15:12:29

DATA FILE = PEPXXX.MOD

Attachment E

- **Reduced Monitoring Justification Memorandum**

MEMORANDUM


DEPARTMENT OF ENVIRONMENTAL QUALITY *West Central Regional Office*

3019 Peters Creek Road

Roanoke, VA 24019

SUBJECT: Justification for Reduced Monitoring Frequency
Reissuance of VPDES Permit No. VA0060844
Lower Stroubles Creek WWTP

TO: Permit File

FROM: Becky L. France, Environmental Engineer Senior. 

DATE: January 6, 2004

Compliance History

Guidance Memorandum 98-2005 allows for reduced monitoring at facilities with excellent compliance histories. To qualify for consideration of reduced monitoring, the facility should not have been issued any Letter of Noncompliance (LON), Notice of Violation (NOV), or Unsatisfactory Laboratory Determinations, or be under any Consent Orders, Consent Decrees, Executive Compliance Agreements, or related enforcement documents during the past three years.

There have not been any enforcement actions issued to Lower Stroubles Creek WWTP during the past three years, and therefore the facility is eligible for an evaluation for reduction of monitoring frequency.

Monitoring Data Evaluation

DMR data from December 2000 through November 2003 were reviewed and tabulated (see attached table). Of the parameters monitored only pH, Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD₅), and Total Suspended Solids (TSS) can be considered for reduced monitoring. The total residual chlorine limit is not eligible in accordance with the guidance which eliminates reduction in monitoring frequencies where stringent water quality based limits are below the quantification level. The results of each parameter are summarized in the table below. DMR data for each of these parameters is included in the attached table. Facilities with monthly baseline monitoring that have an actual performance to permit limit ratio of > 75 percent may be eligible for reduced monitoring.

Parameter	Baseline Monitoring	Actual Performance/ Permit Limit (Monthly Average)	Actual Performance/ Permit Limit (Maximum)	Reduced Monitoring
BOD ₅	7 Days/Week	13.0%	17.3%	1/Week
DO	1/Day	--	--	5 Days/Week
TSS	7 Days/Week	10.8%	9.6%	1/Week

pH: Some of the reported pH minimum data were within 0.5 units of the limit. Therefore, pH is not eligible for a reduction in frequency.

DO: None of the reported DO minimum data were within 0.5 mg/l of the limit and the average is 1.3 mg/l greater than the minimum limit of 6.6 mg/l. The previous permit required monitoring 1/day. The monitoring frequency for DO in the permit has been adjusted to reflect a reduced frequency of 5 days/week.

TSS: According to the Guidance Memorandum, facilities with daily baseline monitoring that have an actual performance to permit limit ratio of < 25 percent are eligible for a reduced monitoring frequency of 1/week. The monitoring frequency for TSS in the permit has been adjusted to reflect this new frequency of 1/week.

BOD₅: According to the Guidance Memorandum, facilities with daily baseline monitoring that have an actual performance to permit limit ratio of <25 percent are eligible for a reduced monitoring frequency of 1/week. The monitoring frequency for BOD₅ in the permit has been adjusted to reflect this new frequency of 1/week.

The permit will contain a special condition that will revert the BOD₅, and TSS monitoring frequencies back to 7 days/week and 1/day for DO monitoring if the permittee should be issued a LON, NOV, or Unsatisfactory Laboratory Determination, or be the subject of an active enforcement action.

The permittee should be reminded that they are still expected to take all appropriate measures to control both the average and maximum concentrations of the pollutants of concern, regardless of any reductions in monitoring frequencies.

Table 2 DMR Data for Lower Stroubles Creek WWTP (Outfall 001)

Month Due	Flow	pH				TSS				BOD ₅				DO
		min S.U.	H ion conc	max S.U.	H ion conc	average kg/d	max kg/d	average mg/l	max mg/l	average kg/d	max kg/d	average mg/l	max mg/l	min mg/l
10-Jan-01	4.66	6.7	1.995E-07	7.3	5.012E-08	0	0	0	0	0	194.3	0	9.3	8.9
10-Feb-01	5.121	6.7	1.995E-07	7.1	7.943E-08	0	0	0	0	81.8	102	4.4	5	9
10-Mar-01	5.554	6.6	2.512E-07	7.1	7.943E-08	0	0	0	0	0	144.1	0	6.7	9.6
10-Apr-01	5.695	6.7	1.995E-07	7.2	6.310E-08	0	0	0	0	196.1	362.3	8.2	12.5	9.4
10-May-01	5.879	6.8	1.585E-07	7.3	5.012E-08	0	0	0	0	302.5	465	13.4	21.3	8.3
10-Jun-01	5.972	6.7	1.995E-07	7.4	3.981E-08	0	0	0	0	147.5	156.1	6.4	5.2	7.1
10-Jul-01	5.25	6.8	1.585E-07	7.3	5.012E-08	0	0	0	0	74	109.4	3.8	6.5	7.1
10-Aug-01	4.533	6.9	1.259E-07	7.3	5.012E-08	0	0	0	0	0	96.7	0	6	6.9
10-Sep-01	4.756	6.8	1.585E-07	7.3	5.012E-08	0	0	0	0	131.8	170.4	7.1	9.9	6.8
10-Oct-01	5.151	6.9	1.259E-07	7.2	6.310E-08	0	0	0	0	102.4	171.9	5.2	8.7	6.9
10-Nov-01	5.092	6.6	2.512E-07	7.2	6.310E-08	96.2	118.1	5	5.7	0	147.8	0	7.7	7.1
10-Dec-01	4.547	6.7	1.995E-07	7.5	3.162E-08	67.9	84.3	3.8	4.4	0	0	0	0	7.2
10-Jan-02	4.54	6.7	1.995E-07	7.2	6.310E-08	66.4	81.4	3.8	4.2	33.2	52.1	0	0	8.2
10-Feb-02	4.696	6.7	1.995E-07	7.1	7.943E-08	52.7	79	3	3.5	51	106.2	0	0	8.7
10-Mar-02	5.027	6.8	1.585E-07	7.2	6.310E-08	48.9	46.4	2.6	2.5	114.2	148	6.1	7.8	8.9
10-Apr-02	4.946	6.7	1.995E-07	7.3	5.012E-08	66.5	94.9	3.4	3.8	117.8	162	5.8	7.7	8.8
10-May-02	5.487	6.8	1.585E-07	7.1	7.943E-08	158.7	259.8	7.6	11.9	203.9	294.2	9.8	13.4	7
10-Jun-02	5.328	6.9	1.259E-07	7.3	5.012E-08	149	170.2	7.1	9.6	292.1	314.5	13.3	13.5	7
10-Jul-02	4.495	6.8	1.585E-07	7.2	6.310E-08	51.2	93.1	2.9	5	42.7	82.2	0	0	6.9
10-Aug-02	4.458	6.9	1.259E-07	7.3	5.012E-08	51.8	31.4	3.1	1.8	20.1	0	0	0	7
10-Sep-02	4.487	6.8	1.585E-07	7.3	5.012E-08	53.8	87.4	3.3	5.8	22.6	61.1	0	0	6.9
10-Oct-02	5.572	6.6	2.512E-07	7.2	6.310E-08	69.3	112.3	3.3	5.9	31.4	125.7	0	6.6	6.9
10-Nov-02	5.977	6.5	3.162E-07	7.3	5.012E-08	83.7	137.5	3.7	6	73.9	218.3	0	8.8	6.8
10-Dec-02	6.607	7	1.000E-07	7.4	3.981E-08	64.6	116.7	2.3	3.8	88.2	174.9	0	6.3	8
10-Jan-03	6.354	6.9	1.259E-07	7.4	3.981E-08	58.5	77.4	2.4	3.4	101.2	222	0	8.7	8.4
10-Feb-03	5.675	7.1	7.943E-08	7.4	3.981E-08	58.4	64.5	2.7	2.9	140.9	138.2	6.4	6.4	9.4
10-Mar-03	8.044	7.1	7.943E-08	7.3	4.032E-08	182.6	241.2	5.7	8.4	400.5	487.7	14.6	17.1	8.7
10-Apr-03	7.108	6.9	1.259E-07	7.2	4.144E-08	157.2	171.4	5.8	6.3	206.2	466.5	7.6	17.8	7.6
10-May-03	7.756	6.8	1.585E-07	7.2	4.259E-08	95.2	209.2	3.1	6	124.1	421.3	0	11	9
10-Jun-03	6.939	7	1.000E-07	7.3	4.377E-08	44.4	63.8	1.6	2.2	0	0	0	0	8.8
10-Jul-03	8.719	7	1.000E-07	7.4	4.499E-08	181.6	319.3	5.1	7.2	73.8	98.5	0	0	8.4
10-Aug-03	7.366	7.1	7.943E-08	7.4	4.624E-08	78	82.4	2.7	2.7	15.5	62.2	0	0	7.7
10-Sep-03	6.174	6.9	1.259E-07	7.5	4.752E-08	35.7	44.4	1.5	1.9	0	0	0	0	7.4
10-Oct-03	6.377	6.9	1.259E-07	7.2	4.884E-08	63.9	67.1	2.6	2.9	0	0	0	0	7.1
10-Nov-03	5.878	6.8	1.585E-07	7.1	5.020E-08	60	63.9	2.6	2.8	0	0	0	0	7
10-Dec-03	5.955	6.8	1.585E-07	7.3	5.159E-08	53	76.4	2.2	3.4	0	0	0	0	8
mean	5.727	6.8	1.610E-07		5.303E-08	59.7	83.2	2.6	3.4	88.6	159.9	3.1	6.2	7.9
maximum	8.719			8.5		182.60	319.30	7.6	11.9	400.5	487.7	15	21	10
minimum	4.458	6.5				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.8
permit limit		6.0		9.0		818.00	1226.0	24	36	818	1226.0	24	36	6.6
performance / permit limit) * 100				0.0		7.30	6.8	10.8	9.6	10.8	13.0	13.0	17.3	

Attachment F

- **Toxics Management Plan Justification Memorandum**

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY Blue Ridge Regional Office

3019 Peters Creek Road

Roanoke, VA 24019

SUBJECT: TMP Justification for Lower Stroubles Creek WWTP; VPDES Permit No. VA0060844

TO: Permit File

FROM: Kevin A. Harlow, Environmental Engineer Senior

DATE: March 31, 2009

DISCUSSION:

Tables 1 and 2 include a compilation of the acute and chronic toxicity testing data during the 2004 permit term. For outfall 001, the facility has completed five annual acute and chronic toxicity testing events using *Ceriodaphnia dubia* and *Pimephales promelas*, respectively. There was no toxicity demonstrated during any of the testing events.

RECOMMENDATIONS:

The facility should continue annual compliance monitoring using *Ceriodaphnia dubia* for the acute toxicity tests and *Pimephales promelas* for the chronic toxicity tests.

Table 2
Chronic TMP Test Data – *Pimephales promelas*

Event	LC50	NOEC	TUc	% Survival in 100% Effluent
1st Annual	>100	100	1	100
2nd Annual	>100	100	1	100
3rd Annual	>100	100	1	100
4th Annual	>100	100	1	100
5th Annual	100	100	1	100

Table 3
Chronic TMP Test Data – *Ceriodaphnia dubia*

Event	LC50	TUa	% Survival in 100% Effluent
1st Annual	>100	<1	100
2nd Annual	>100	<1	100
3rd Annual	>100	<1	100
4th Annual	>100	<1	100
5th Annual	>100	<1	100